THE *Signature* SERIES

NetworkWorld

September 24, 2001

Volume 18 Number 39

Buzz

We deflate the hype you're hearing

- Wireless devices
- Anti-DDoS software
- Web services
- 10G Ethernet
- Enum
- P2P
- InfiniBand

and more...

Newspaper $5.00

SIX DANGEROUS MYTHS

ABOUT e-BUSINESS PLATFORMS.

SYBASE e-BUSINESS SOFTWARE. BECAUSE EVERYTHING

THE STRAIGHT GOODS ON e-BUSINESS PLATFORMS.

THE WHOLE e-BUSINESS THING IS A FAD.

Nothing could be further from the truth. In times of economic downturn, it may seem prudent to put the whole e-Business issue on the backburner. But it's not. Tough times call for speed, nimbleness and agility more than ever. The time to get smart and implement e-Business solutions for your customers is today.

THE INTERNET CHANGES EVERYTHING.

The Internet does not change everything. It doesn't change the business rules that run your company. Or the infrastructure you've spent years building. Or the nature of your business. Or your need to generate revenues and profit.

The Internet is obviously a critical part of any e-Business. But the Internet is only a common set of protocols for the transport of information. It's how well you manage that information that determines the success of your business.

IT'S A ONE-BRAND WORLD.

This myth surrounds just about every significant e-Business platform discussion. Virtually every purveyor of e-Business platforms touts their version of this "one-brand" world. Their brand, of course. Big surprise.

At Sybase, we know it's just not true. Countless brands compete, cooperate and commingle inside your company. It's laughable to pretend that any one external organization can "standardize" all the various protocols, systems, components, new technologies, languages, databases and vendor relationships that your business depends on to succeed.

Our open e-Business platform embraces diversity. Making all of this stuff work together is what our stuff is all about.

A WEBSITE IS A PORTAL. A PORTAL IS AN e-BUSINESS.

Well, not quite. A website is not a portal. And even if it was, a portal is not an e-Business.

Portals and websites along with application servers, databases, customer relationship programs, automated supply chains, an efficiently connected field force and the rest of your back office are all vital components of an e-Business. It's making them work together that's the trick.

Unless data has the ability to travel from a customer's pager to your trusty S390 mainframe and then back to your customer via cell phone, you may very well have a website, but you really don't have an e-Business.

Our proven e-Business platform totally delivers this end-to-end functionality. It integrates every single aspect of your business. What's more, it has the scalability to constantly integrate your new components into the mix. Like say, 10,000 brand new customers, for example. Or a new CRM app.

Just something to think about when people offer you buzzwords instead of technologies.

IF AT FIRST YOU DON'T SUCCEED, THROW SOME MORE MONEY AT IT.

Hah. Very funny. But still a popular belief for a long time. Listen: It's all pure poppycock. The real e-Business solutions deliver real-life business results. By that we mean increased revenues, reduced costs and profit to your bottom line.

At Sybase, we provide e-Business solutions among the FORTUNE 500,® to the largest firms on Wall Street, to the biggest names in healthcare, to the world's largest computer and networking companies, and to the biggest players in Europe and Asia.

We lead the way in enterprise portal technology. We strongly dominate in enterprise wireless solutions. And we have some of the best middleware integration solutions found on our planet.

So don't throw your money around. Look for an ROI that has a sense of immediacy. Invest carefully based upon proven past performance and reasonable expectations of return.

IT'S ALL OR NOTHING.

The Big Bang Theory: You need to do all of this at once. Not at all true.

We can help you solve the problems you have today while simultaneously building a platform that can solve tomorrow's problems, tomorrow.

Implement in the way that's right for your firm. From the bottom up. Or the top down. Component by component. It's your choice.

Call 1-800-8-SYBASE or visit www.sybase.com/myths and we'll show you how. Fact, not myth.

SYBASE®
Information Anywhere™

©2001 Sybase, Inc. All rights reserved. All trademarks are the property of their respective owners.

WORKS BETTER WHEN EVERYTHING WORKS TOGETHER™

Data drives
your *business*.

VERITAS Software
drives your *data*.

VERITAS. The software that *fuels* storage.

VERITAS™

Register today for VERITAS VISION™ 2001
at veritasvision.com

VERITAS™
VISION
2001

Visit us at veritas.com

[illegible] 2001 VERITAS Software Corporation. All Rights Reserved. VERITAS, VERITAS SOFTWARE, the VERITAS logo and all other VERITAS product [illegible]
[illegible] Software Corporation in the USA and/or other countries. Other product names and slogans mentioned herein may be trademarks or registered trademarks [illegible]

9/24/01

NetworkWorld

News

- **7 Nimda** leaves users questioning **Microsoft.**
- **7** Economy rearranges **network industry.**
- **10 Attack aftermath coverage:** Protecting your network in a time of terrorism.
- **12 Attack aftermath coverage:** Getting back to business.
- **12 Attack aftermath coverage:** Telephone companies continue to work overtime on systems.
- **14 B2B marketplaces** frustrate suppliers.
- **14** Will business-to-business marketplaces **survive?**
- **16 Red Creek** aims to automate VPN management.
- **16** New breed of **storage systems** to debut.
- **18 ITenol** automates CRM applications procurement.

Infrastructure

- **19** Vendors fortify integrated Web devices.
- **19** Benchmark device eases automated data backup.
- **22** Hewlett-Packard has powerful midrange server on tap.
- **22 Dave Kearns:** Disaster recovery: Are you ready?

Enterprise Applications

- **25** Vendors bolster self-service software.
- **25** IBM adds biz features to WebSphere.
- **28 Review:** Visualware's VisualPulse 1.7 provides network managers with a top-notch tool for monitoring packet loss and latency.
- **30 Scott Bradner:** When comprehension fails.

Net.Worker

- **31** Wrapping up Telework Top 10 series.

Service Providers

- **33** Content delivery networks carry the heavy load.
- **34 Johna Till Johnson:** When is a service provider not a carrier?

The Edge

- **35** Qwest tries out free-space optics service.
- **35** Narus polices prepaid wireless networks.

Technology Update

- **39** 802.1X authenticates 802.11 wireless.
- **39 Steve Blass:** Ask Dr. Internet.
- **40 Mark Gibbs:** Curing Web insanity.
- **40 Keith Shaw:** Your cell phone can never be too thin.

Opinions

- **42 Editorial:** Have your cell phone call my PDA.
- **43 Salvatore Salamone:** Time for videoconferencing.
- **43 Daniel Briere:** The 'brighter' side of war.
- **94 Backspin:** Television is still the winner.
- **94 Compendium:** Stuff you just can't miss.

Management Strategies

- **45** Virtual teams, real benefits: Organizing IT into virtual teams extends capabilities and saves money.

ILLUSTRATION LAUREN URAM

47

The Buzz Issue

Buzzwords

We deflate the hype you're hearing on wireless, anti-DDoS, Web services, 10G Ethernet, Enum, IP VPNs, portals, peer-to-peer, InfiniBand, optical Ethernet and TCP Offload Engines, among other buzzwords.
Page 47.

Silent buzz, secret buzz

This wintry economy is only a facade.
Page 74.

NetworkWorldFusion

www.nwfusion.com

Interactive

Attacked

Readers continue to share their feelings on the events of recent days.
DocFinder: 6146

Will liberty be the next casualty?

Ann Harrison, who writes our file-sharing newsletter, wrote a newsletter wondering whether government moves to increase surveillance of electronic communication would lead to a loss of some rights. What do you think? Read her thoughts, then discuss. **DocFinder: 6147**

Spam

Our recent article on antispam forces has generated considerable debate. Jump in. **DocFinder: 6148**

Connecting two PBXs

A user is looking to tie two PBXs together via a T-1 line. Is standard T-1 enough, or does he need to use Primary Rate Interface ISDN?
DocFinder: 6149

■ **CONTACT US** Network World, 118 Turnpike Road, Southborough, MA 01772; **Phone:** (508) 460-3333; **Fax:** (508) 490-6438; **E-mail:** nwnews@nww.com; **STAFF:** See the masthead on page 14 for more contact information. **REPRINTS:** (717) 399-1900

SUBSCRIPTIONS: Phone: (508) 490-6444; Fax: (508) 490-6400; E-mail: nwcirc@nww.com

Columnists

Help Desk

Disaster-recovery plans
Ron Nutter discusses what to look for if you're reevaluating your disaster-recovery plans these days.
DocFinder: 6159

Keeping Current

What can we do to fight terrorism and hate?
Fred McClimans talks about the aftermath of the attacks.
DocFinder: 6163

Home Base

Alternative office space
In the wake of the recent terrorist attacks, columnist Jeff Zbar says companies have many office space options via telework.
DocFinder: 6173

What is DocFinder?

We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested information.

Is your SLA
just another piece of paper?
Or is it built with Brix?

For guaranteed IP performance, don't just take your service provider's word for it. Make them prove it – with Brix Networks.

You're an enterprise IT professional. You've partnered with a service provider. And you've signed the SLA. So, how do you *really* know you're getting all that's been promised?

Take the guesswork out of your SLAs. Choose a provider who has a network *Built with Brix*. The Brix System is the only complete solution that proactively measures and guarantees advanced IP services. And, Brix verifies the real-time, end-to-end performance of VPNs, VoIP, streaming media, and hosted applications.

Make sure your SLA is worth more than just the paper it's written on.

Make sure it's *Built with Brix*.

Brix™
Networks

A MEASURE ABOVE

For the latest independent research on the vital role SLA verification plays when enterprises choose a service provider, visit **www.brixnet.com/sagewp.**

1-888-BRIXNET • 1-978-367-5600
info@brixnet.com • www.brixnet.com

©2001 Brix Networks, Inc. Brix, Brix Networks, A Measure Above, Built with Brix, and the Brix Networks logo are trademarks of Brix Networks, Inc.

News

Nimda virus riles up Microsoft users

Nasty worm trashes files, forces net shutdowns; pressure builds on Microsoft to shore up software security.

■ BY ELLEN MESSMER AND JOHN FONTANA

The complex computer virus Nimda, which swept like a tornado across the Internet last week, attacked Microsoft servers and desktops with a ferocity unrivaled by previous worms and in its wake left many network executives questioning the growing chore of patching and repatching Microsoft's Web-based software.

The virus did its damage by exploiting dozens of known vulnerabilities in the Microsoft Web server, Outlook mail client and Internet Explorer browser. Nimda corrupted files. It added itself to Internet Information Server (IIS) Web pages, infecting PCs through vulnerable Internet Explorer browsers. Wherever it wormed in, Nimda scanned IP addresses for more victims, raising concerns about denial-of-service attacks and slowing Internet performance. By the end of last week, Nimda attacks in the U.S. had largely subsided, but Europe and Asia were still having problems.

"Nimda spreads with a ferociousness not yet seen," says Ed Skoudis, vice president of ethical hacking at security firm Predictive Systems in Herndon, Va.

"Nimda spreads with a ferociousness not yet seen."

Ed Skoudis
Vice president of ethical hacking, Predictive Systems

While Nimda caused significant damage — so far infecting more than 2 million PCs and servers worldwide — it was but another mess IT professionals had to clean up in a procession of problems that seem to spread all too frequently across Microsoft-based servers and clients. There have been more than 26 patches issued for various Microsoft product vulnerabilities since May. The IIS server has had at least seven such patches. And for Nimda, there are some 15 different patches to apply to different systems. It can get oppressive, users say.

Almost every week brings another alert about vulnerabilities in Microsoft products, says systems administrator John Mckean with the Oregon State Lottery. "I spend a disproportionate amount of my time responding to these security threats to Microsoft Windows products in relation to the time I must spend securing either our Sun or Novell boxes."

Mckean's organization has five Sun Solaris Servers, 12 Novell NetWare servers and five Windows 2000 servers. But 80% of his time is spent on patching Microsoft, he says. "With the Novell and Sun operating systems, the need to patch the servers has not been problematic," he says.

Others seem resigned to the constant patching.

"It has gotten to the point where we have to identify a single administrator to keep up with the Microsoft patches. It can get a bit ridiculous, but if it keeps us safe from attack and closes security holes, in the long run it's worth the effort," says Carl Fries, the network manager for NCI Building Systems in Houston. The company has nearly 50 NT 4.0 servers. "When a new patch comes out, we drop everything and we do what we need to do. We inform all the technicians at our sites around the U.S. that a patch will be installed on their servers," he says.

Donald Woeltje, a network manager with St. Elizabeth's Hospital in Belleview, Ill., thinks Microsoft is making a good-faith effort to address security, but needs to try even harder. The hospital was forced to shut down its Internet e-mail connection, as were several financial institutions.

"I do get tired of having to apply the available patches," he says. "[But] my responsibility is to protect the hospital's systems." After installing the Network Associates Inc. (NAI) Total Virus Defense virus update against Nimda on Microsoft servers, he reopened e-mail access.

"Nimda has been driving me crazy," Woeltje says. The NAI WebShield Simple Mail Transfer Protocol Server was sending large numbers of alerts reporting e-mail infected with the Nimda worm. "So far, as best I can tell, we've been able to prevent infection," he says.

Although Microsoft seems to be the main target of virus writers, Woeltje says he's not yet ready to switch to alternate vendor products.

But the need to continually patch Microsoft software — and the growing security risk associated with not doing it — is driving up the cost of ownership, says John Pescatore, a Gartner security analyst.

See Nimda, page 18

Network industry rearranged

Hardware hit hardest by economic woes; post-attack environment raises uncertainties.

■ BY PHIL HOCHMUTH

ECONOMY ON THE EDGE

First in a three-part series

A seemingly endless parade of layoffs, bankruptcies and cutbacks has rearranged the vendor playing field, leaving it a much different place than it was just 18 months ago.

The result is that vendors that were strong are getting stronger relative to their competitors, while the weak are being weeded out. Compounding the situation is the belt-tightening expected in the wake of the recent terrorist attacks, which have already made their mark on the stock market and the economic forecasts of companies from 3Com to Oracle. Those attacks prompted research firm IDC to scale back its estimates of IT spending this year to its "worst-case scenario": a growth of 7.9% over last year.

This is the first in a series of three stories that will look at how the economic struggle is reshaping the landscape, how enterprise network executives are changing their buying strategies in response, and how the industry's potential for innovation may be affected in the long run.

All segments are feeling the pain, but the hardest hit by far is hardware. Research firm Dell'Oro Group predicts that the Ethernet switch market will decline 7% in 2001 from the previous year — the first backslide this market has seen.

The firm says a slowdown in desktop switch port upgrades are to blame for the decline, as most large companies have already upgraded to 10/100 Ethernet, and Gigabit Ethernet in the core. Dell'Oro doesn't expect the market to pick up again until 2003, when 10G Ethernet in the backbone and Gigabit Ethernet to the desktop begin the next enterprise upgrade cycle.

Meanwhile, the total router market shrank 9% from the first quarter to the second quarter of this year, according to Cahners In-Stat.

The resulting layoff numbers among network hardware makers have been astounding. Nortel has become the poster child for layoffs, announcing 30,000 employee cuts this year. 3Com has let go 41% of its workforce since November. Even Cisco said last March that it would trim its staff by several thousand.

Other changes have contributed to the industry's transformation. 3Com axed its large gear for enterprise networks last year, then reduced its consumer efforts earlier this year. Cabletron splintered into four companies and then finally ceased to exist last month.

"You don't see a lot of 3Com anymore," says John Burgess, vice president of network design engineering for Predictive Systems, a network integrator and consultancy that serves large businesses. "Cabletron isn't what it used to be. It's really a different market now. There are not a lot of new companies out there, either."

Burgess says most users he has dealt with have followed the same path.

"They've changed from one vendor or another to Cisco," he says. "I haven't seen it any other way."

Cisco has not been immune to the economic downturn after several years of strong growth. The company may not be as mighty as it once was, but its position in the enterprise network equipment market has actually improved by knocking many

See Economy, page 93

News Bits

Microsoft caves on security support

■ Microsoft said last week it is adding support for the Kerberos 5.0 security standard to its Passport authentication service as a way to foster integration with similar Kerberos services from other vendors and create a single authentication service across the Internet. Kerberos is an open standard for securing digital transactions. Passport is Microsoft's single sign-on service that lets users visit other Web sites and access password-protected services without having to sign on at those sites. Microsoft also said it will work with corporations to enable their internal authentication systems to work with Passport. For instance, employees could sign on to internal Web sites such as those that manage employee benefits. Microsoft also said it will consider letting a neutral third-party, or a federation of companies that includes itself and industry rivals, oversee Passport.

3Com's first-quarter losses skyrocket

■ First-quarter net losses widened at 3Com, as the struggling network equipment maker saw sales evaporate compared with the year-ago period. The company reported a net loss of $232 million on sales of $390 million. That represents quadrupling of losses compared with the same period last year when 3Com lost $59 million. First-quarter revenue tumbled by 58% compared with the year-ago quarter, when 3Com recorded revenue of $934 million. 3Com, which said it was pleased with expense cuts and improved cash flow, is in the midst of a restructuring. The company said it is on track to cut 1,000 more staff than the 5,000 job cuts already announced. The job cuts, which are to be completed by November, will reduce 3Com's staff from 12,000 to 6,000.

Be a Net Know-It-All

■ **THIS WEEK'S QUESTION:**

What's the name of the network service providers' organization that evolved out of the NSFNet regional tech meetings back in the mid-1990s?

Answer this and nine additional questions online and you could win $500! Visit **Network World Fusion** and enter **2349** in the Search box.

www.nwfusion.com

More gloom, Compaq CEO says

■ IT spending will not stabilize anytime soon and PC innovation is stagnating, said a somewhat gloomy-sounding Michael Capellas, Compaq's CEO, last week during a keynote address at IDC's European IT Forum. Just before Capellas' speech, market research firm IDC came out with a new forecast, which has worldwide IT spending increases leveling off at about 10% per year between 2002 and 2005. The forecast was adjusted downward for the effects of the economic slump and the recent terrorist acts on the U.S. There will be growth in certain areas, such as IT services, a sector the combined Hewlett-Packard and Compaq will focus more on, said Capellas, who is slated to become president of "the new HP." Hewlett-Packard announced plans to buy Compaq earlier this month for $25 billion.

Lucent axes switch

■ Lucent is discontinuing development of its next-generation ATM multiservice switch in an effort to trim its product portfolio as part of a restructuring plan to return to profitability. The MSC 25000, announced in June, was slated to go into beta testing this month and ship by year-end. Lucent is now developing an IP/Multi-protocol Label Switching (MPLS) switch for the multiservice core to replace the MSC 25000. Lucent, the leading vendor of ATM switches for service providers, is essentially acknowledging that the replacement of ATM with IP/MPLS as the technological underpinning of multiservice networks is approaching faster than expected.

■ The Good The Bad The Ugly

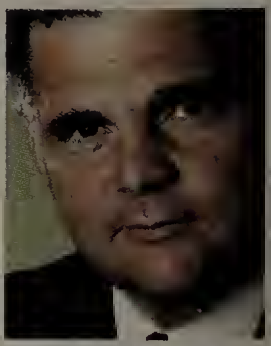
Borland, Cisco, Compaq, Intel and other high-tech companies, in what was considered a patriotic gesture, announced stock buyback programs aimed at helping stabilize the economy in the wake of the attacks on the U.S. (Yes, the market tanked anyway, but you try to find some good news from last week.)

Red Hat and **Caldera** issued bad news last week, making it look as though it's open season on Linux penguins. While Red Hat broke even, depending on how you look at its numbers, its revenue dove. Caldera, meanwhile, detailed layoffs and other streamlining efforts.

3Com CEO Bruce Claflin last week said, "3Com made solid progress during the first quarter of its fiscal year." That's one way of looking at a quarter during which the company's net losses widened to $232 million and revenue sank to $390 million from $934 million in the year ago quarter (see brief, left).

EMC takes a hit

■ The bad news keeps coming. EMC last week said it will lay off 2,400 employees by year-end and is likely to post a loss in its third quarter ending Sept. 30 because of spending cutbacks by its customers. It is "highly unlikely" EMC will break even this quarter, said CEO Joe Tucci. Along with the layoffs, EMC will launch "sweeping" cost-reduction plans, encompassing real estate, inventory and "other areas," Tucci said. EMC last week also acquired storage-monitoring software maker Luminate Software for $50 million.



Joe Tucci, EMC's CEO, says his firm will take 'sweeping' cost-cutting measures.

Netopia utopia

■ Netopia last week bought Cayman Systems for $11 million and with it scooped up some major service provider customers. The deal, which is expected to close within 21 days, will bring SBC Communications, BellSouth, AT&T Broadband, Verizon Enterprise Systems and ComCast as new Netopia customers. Cayman has been selling — through these carriers — its asymmetric DSL routers meant for businesses. Netopia already sells symmetric DSL routers, which include firewall and VPN capabilities, to business users.

AltaVista taps new CEO, announces layoffs

■ Search engine vendor AltaVista last week named James Barnett its new CEO and said it will lay off 160 employees, about one-third of its workforce, bringing its head count down to 340 people. Barnett is replacing Rod Schrock, who stepped down a year ago for personal reasons. Since then, AltaVista has been run by acting CEO Peter Mills, who was brought over from @Ventures. AltaVista said the layoffs are part of its plan to transform its U.S. shopping-comparison service into search functionality on its Web site, AltaVista.com, and consolidate and centralize general administrative and finance functions.

NEC gets Active, snaps up messaging software

■ NEC America beefed up its communications business last week by buying the messaging software products of privately held Active Voice. NEC America — an affiliate of Tokyo's NEC — makes various products for switching, fiber-optic transmission, fax and other communications systems. The company plans to make Active Voice an independent subsidiary that will sell its Repartee, PhoneSoft, Replay and Lingo products, all of which are designed to help companies link telephone services with other types of communication, such as fax and text and data messaging.

www.xo.com

How do you take your data services? We make ours strong. From a high capacity fiber optic network with self-healing SONET rings to a menu of VPN, Private Networking, Managed Server, Collocation and Broadband Internet Access, we'll make sure your business is completely wired.

XO
Not just talk. ™

NetworkWorld
NW200
2001

CALL TO GET CONNECTED 1-866-869-9696 | VOICE, DATA AND WEB FOR BUSINESS

© Copyright 2001 XO. All rights reserved. XO and the XO design logo are trademarks of XO Communications, Inc.

Protecting a net in a time of terrorism

Security precautions need to be raised in light of larger cyberattack threat.

■ BY SHARON GAUDIN

Think you're ready for a network attack? You're probably not.

The Sept. 11 terrorist strike against New York's World Trade Center, a global financial hub, crippled several financial giants for days, costing the country billions of dollars. Now less than two weeks later, security experts warn that future attacks could target businesses' computer networks, destroying critical information or knocking them offline and striking a further blow to the U.S. economy.

"We know we are a target."

Gregor Bailar
CIO, Nasdaq

"Given an economy that is already hurting, the risk of threats and significant damage from a cyberattack are real," says Tim Belcher, CTO of security firm RipTech and a former employee of the U.S. Department of Defense.

"It was always assumed that a small group of terrorists could do much more damage to the cyberworld than the physical world. There was some surprise that this [first attack] wasn't a cyberattack," he says.

"We know how damaging this could be," adds Belcher, who estimates that only 10% of businesses using the Internet have security measures in place beyond a firewall.

And the lack of a fortified security effort is not going to be acceptable in a time of terrorist threats and a heightened state of alert, according to Richard Power, editorial director of the Computer Security Institute in San Francisco.

"We're entering a whole new era now," Power says. "America has suffered a terrorist attack of historic proportions, and now we're going to go after the perpetrators. Cyberattacks may be inevitable. . . . Physical and cyberattacks in conjunction could cause panic across a whole economic sector."

And Renee Guttmann, director of information security at *Time*, a publishing giant in midtown Manhattan, now knows firsthand about securing a company's critical information during a terrorist attack. She immediately shifted into crisis mode when she heard a plane had struck Tower One of the World Trade Center.

"It was instantaneous," Guttmann says. "We knew even after the first plane hit that this wasn't just an accident. When you're in security, your senses are alert to different events going on. This is a kind of event that as soon as you see it, your instincts tell you that this is just not a simple matter. It's a cause for alarm."

Guttmann says the information security staff activated their crisis plan, hardening up the network's perimeters, alerting security consultants and sealing off access to the building. She says they also increased their network monitoring, scanned the Internet for mentions of *Time* in chat rooms or on message boards and asked employees to alert them to any suspicious activity on the network or in the building.

And she says they haven't lowered their defenses since the attack, especially in light of the subsequent outbreak of a destructive worm, Nimda.

"There doesn't seem to be any downtime from a fairly high state of security alert," Guttmann says. "This has made things more real."

Ken VanWyk, CTO of ParaProtect, a security portal in Centreville, Va., says Guttmann and other security managers are smart to remain in a high state of alert against a range of threats. He says terrorist strikes, like many well-planned hacker breaches, can take many forms, including outright attacks to bring down a network, Web site defacement, new viruses and worms, and denial-of-service attacks.

The government is issuing warnings for a variety of intrusions.

On Sept. 14, the National Infrastructure Protection Center issued an advisory that they expect "an upswing in incidents," including bringing old viruses, or at least chunks of them, out of storage and simply renaming them. Attachments with phony names such as "World Trade Center photos" or "Firefighters fund" could con a lot of people eager for information about the terrorist attacks into unwittingly exposing their networks to viruses.

NetworkWorld
■ SEMINARS&EVENTS
Need strategies for securing your network systems, storage and backup? Attend our multicity, Storage Town Meeting.
DocFinder: 6160

"If I was a security manager at a major corporation, I'd be making sure that my perimeter protections were up to date and I had thorough methods to detect problems immediately," VanWyk says. "If someone is trying to get in, there's almost always signs of someone wiggling the doorknob first."

Gregor Bailar, CIO at Nasdaq, the world's first electronic stock market, says his staff is on high alert and constantly looking for signs of an intrusion, both to the physical building and to Nasdaq's computer network. Nasdaq was headquartered at 1 Liberty Plaza, adjacent to the World Trade Center Towers. That location was evacuated safely after the Sept. 11 attacks. The 127 employees who worked there have been relocated to other facilities in New York City, Connecticut and New Jersey.

Market operations, including the technology that runs the market, were not affected by the tragedy, or the relocation of the employees.

"We know we are a target," says Bailar, who adds that Nasdaq is in constant contact with federal authorities, because it is an element of the National Information Infrastructure. "There has to be a whole discipline to how you manage these large infrastructures, and now we have to be even more vigilant about both physical access and forensic readiness."

Bailar, who runs a network with more than 7,000 workstations attached from various sites, adds that there are so many potential threats it's difficult to even count them all.

RipTech's Belcher says financial institutions, such as Nasdaq and major banks, are considered to be prime targets for any potential network attacks. Healthcare facilities, the Federal Aviation Administration's air traffic control towers and power distribution grids also make the list. However, financial institutions are some of the most secured businesses in the country, most experts agree. And Belcher says the utilities, as well, have been ramping up security over the past year.

And network intrusions, even terrorist threats, have been an ongoing concern to American businesses, according to Special Agent Andrew Black of the FBI's San Francisco bureau. "There are groups all over the world that have been trying to steal our information," he says.

But security experts say the bar has just been raised and network administrators need to raise their security precautions along with it (see graphic).

Vincent Locurio, technical support manager of UPS Atlanta, says the international courier definitely is more concerned about network and physical security since the Sept. 11 attacks.

"What we used to do securitywise, which was pretty good, has to be re-evaluated," says Locurio, who adds that he's confident that if the company was attacked, it could be back up and running in a day. "We do something called failtrack where we assume one of the centers isn't always going to be there. We make sure the other sites can handle 100% of the traffic. If not, we upgrade immediately. We do this testing frequently."

"My advice," Locurio says, "is to plan for the unexpected."

April Jacobs and Sandra Gittlen contributed to this report.

Staying secure

Security experts offer these steps to help safeguard your computer network:

- Make sure all critical information is running on a mirrored system in a main remote location (a hot site), and a spare site.
- Plan out what to do if you can't communicate with the hot site.
- Keep back-up tapes up to date and store them in a remote location.
- Know where your network begins/ends and keep your network diagram updated.
- Have an information security department that is separate from the IS department.
- Have a plan for communicating with customers if your Web site is down.
- Figure out whose systems are affected by your network's downfall, and if your system will be affected by other companies' downfalls.
- Know what systems to shut down or protect and have a plan for relocating essential operations in an emergency.
- Keep a phone list for key IS and security personnel.
- Keep your disaster-recovery plan up to date.

Correction

■ The story "Third time's the charm," (Sept. 10, page 65), neglected to include Alcatel, Anritsu and Marconi in the list of participating vendors.

IT'S NEW!

Get the domino effect.

1:59 PM
FRI, SEPT 28

BlackBerry by Motient for Lotus Domino

Bring wireless connectivity to your enterprise

Get unmatched reliability and security

Runs on Motient—America's largest data network

Introducing BlackBerry™ by Motient for Lotus® Domino™

BLACKBERRY

Try BlackBerry by Motient
FREE for 60 Days!
(offer expires 12/31/01)

motient

[illegible] BlackBerry and RIM families of related marks, images and symbols are the exclusive [illegible] "BlackBerry by Motient"—used by permission. Lotus Domino is a trademark [illegible]

www.getthedominoeffect.com America's Data Network 1-800-MOTIENT ext. 7115

Getting back to business

Wireless technologies, IP telephony play key roles in recovery efforts.

■ BY NETWORK WORLD STAFF

NEW YORK — New technologies, plus a good dose of creativity, have enabled companies across New York City to get their networks up and running in the wake of the World Trade Center attacks.

How quickly a company was able to get back to business depended largely on its location. Some, unable to return to their destroyed or damaged offices, were forced to find office space in other parts of New York or New Jersey and set up IT infrastructures from scratch. But even those lucky enough to have their offices intact faced a host of data and voice network obstacles that required some fancy footwork to overcome.

The fact that the New York Court System had been experimenting with fixed wireless and voice-over-IP technology played a key role in its network recovery efforts.

The court system lost many of its T-1 and frame relay circuits when Verizon's central office on West Street, located near the World Trade Center complex, was badly damaged as a result of the attacks. Although the Verizon office is still standing, it remained out of service as of late last week.

The court system uses its data lines to connect the New York City buildings to court houses throughout the state (see www.nwfusion.com, DocFinder: 5984). ISDN back-up lines brought some affected court buildings back online, although Sheng Guo, the court system's CTO, describes the technology as "painfully slow."

Guo's biggest technical headache was reestablishing communications for the six court buildings closest to the World Trade Center site. The buildings, connected to one another by fiber, were left with no data or voice connectivity.

On Wednesday, the day after the attack, Guo used Nortel equipment to provide an 11M bit/sec fixed wireless connection from one of the buildings to a data center farther away from the disaster site. The data center has an OC-3 link connecting it to the rest of the court system in upstate New York.

After establishing the wireless connection, Guo installed IP phones in the six stranded buildings Thursday and Friday. The phones connect to a Nortel Succession Communication Server for Enterprise, essentially an IP PBX, located in the data center. Voice-over-IP gateways in the data center and in another building upstate let callers in the buildings reach the public phone network.

Meanwhile, Guo says the 11M bit/sec gear was too slow to support all the data and voice traffic for the six court buildings, so last Monday he upgraded the wireless link to 100M bit/sec using Canobeam DT-50 optical beam transceivers in one of the buildings and at the data center. Guo was smart and lucky — he had been testing the Canobeam equipment as an alternative to digging up streets to install a fiber network.

"What we have accomplished in the last few days just goes along with what we had planned to do earlier," Guo says. "The [World Trade Center] attack just made us mobilize resources and accelerate our schedule."

Perhaps the most amazing part of Guo's story is that he plans to keep the makeshift network up and install 600 IP phones in the six court buildings after the technologies proved their mettle during the ultimate test.

Columbia University, located on the Upper West Side of Manhattan well away from the chaos at the World Trade Center site, also used IP phones to let its students make phone calls to concerned parents and friends when the public phone switches in the area were overwhelmed by calls in the hours after the attacks.

Columbia resorted to Internet 2 — an experimental network used to test quality of service and other advanced technologies — to carry the IP voice traffic from its campus to universities in other cities, where gateway devices routed the calls back into the public phone network.

The first calls from Columbia over the makeshift voice network were made at 11:36 a.m. Sept. 11, says Alan Crosswell, director of network systems at Columbia's Department of Academic Information Systems. Three hours later, four IP phones were available to students, faculty and staff. More phones were added throughout Wednesday.

Although Columbia had no formal plans in place to set up the Internet 2 network, Crosswell says it worked well and that the voice quality was good.

Even after the stock markets reopened last Monday and businesses were allowed to return downtown, phone service in the New York area remained spotty as call volumes overwhelmed the weakened phone network. Many businesses turned to systems other than the public phone network to get their operations running.

Mintz Levin, a law firm in midtown Manhattan, turned to Research in Motion's BlackBerry wireless handheld devices to communicate.

"My law firm is tech-oriented, and we've rolled out 500 BlackBerry devices for use," attorney Jeffrey Moerdler says.

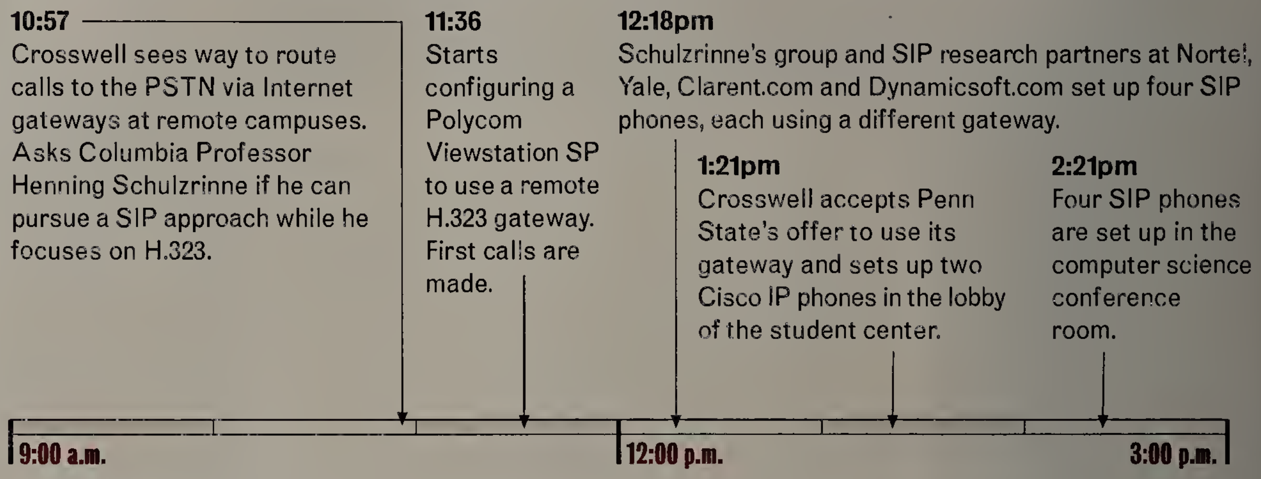
BlackBerry devices work on wireless networks that are separate from carrier cellular networks, some of which were destroyed in the World Trade Center attacks.

The BlackBerry devices also came in handy Sept. 11, when building management told Mintz Levin to evacuate its offices. The firm's manager could broadcast a notice about the evacuation, letting Mintz Levin offices and employees in other locations keep up to date with events.

This story was compiled by Mike Martin, Kathleen Ohlson, Ellen Messmer, Phil Hochmuth and Tim Greene.

Disaster relief in IP phones

Columbia University's Alan Crosswell sets out a timeline of events involved with bringing up emergency IP phones for students and staff on the day New York City was attacked.



10:57 Crosswell sees way to route calls to the PSTN via Internet gateways at remote campuses. Asks Columbia Professor Henning Schulzrinne if he can pursue a SIP approach while he focuses on H.323.

11:36 Starts configuring a Polycom Viewstation SP to use a remote H.323 gateway. First calls are made.

12:18pm Schulzrinne's group and SIP research partners at Nortel, Yale, Clarent.com and Dynamicsoft.com set up four SIP phones, each using a different gateway.

1:21pm Crosswell accepts Penn State's offer to use its gateway and sets up two Cisco IP phones in the lobby of the student center.

2:21pm Four SIP phones are set up in the computer science conference room.

Note: See Crosswell's full account at www.ietf.org/mail-archive/working-groups/sip/current/msg01026.html

Telcos continue to work overtime on systems

Carriers last week continued to scramble to get business in New York and Washington, D.C., back on track, and by most accounts, were faring well under the circumstances.

By Friday, Verizon said it had resumed service to all large business users in the World Trade Center area and was turning its efforts to restoring service to small and midsize businesses. The provider estimated between 9,000 and 14,000 small to midsize businesses were without service.

While Verizon's network was able to meet the demands placed on it by the stock markets, voice service in the city was spotty, with calls in and out frequently getting circuit busy signals.

The West Street central office that was damaged Sept. 11 remained out of service. Verizon managed to reroute more than half of the 3.5 million data lines served by the office.

Wireless service, which played such a key role in the immediate aftermath of the attacks, was also returning to normal last week. Sprint PCS reported that as of last Monday, 93% of its network in the New York City area was functioning. A number of carriers deployed additional cell sites in the city, both to make up for lost sites and to add capacity for emergency workers relying on cell phones.

A number of the large carriers, including AT&T and Verizon, responded to last week's disaster by donating free payphone service, calling cards and wireless phones to aid in the relief effort. Some competitive local exchange carriers, such as Yipes Communications and Everest Broadband, offered temporary office space to displaced businesses or temporary free Internet access.

— Michael Martin

IBM, the e-business logo and DB2 are registered trademarks of International Business Machines Corporation in the United States and/or other countries. UNIX is a registered trademark of The Open Group in the United States and other countries. Other company, product and service names may be trademarks or service marks of others. ©2001 IBM Corp. All rights reserved.

TWO CODERNAUTS. ONE DISTRIBUTED DATABASE. THE PARALLEL UNIVERSE WAS SAVED.

DB2® *FOR* UNIX®

GROWING MORE THAN 2.5 TIMES FASTER THAN ORACLE

e business software **ibm.com**/db2/faster

**IT'S A DIFFERENT KIND *OF* WORLD.
YOU NEED A DIFFERENT KIND *OF* SOFTWARE.**

B2B marketplaces frustrate suppliers

Ariba, Commerce One software creates difficulty in viewing online catalogs.

■ **BY KATHLEEN OHLSON**

Ariba and Commerce One are finally rolling out fixes to satisfy suppliers that use online business-to-business marketplaces, but the question is whether the efforts are too little and too late.

Marketplace software vendors have been criticized for a couple of years for failing to do enough to justify suppliers' greater participation in online marketplaces, and the lack of supplier buy-in has been a major reason online marketplaces have fallen so short of expectations.

It might seem only natural that when suppliers format and ship their online catalogs to Ariba's Commerce Services Network (CSN) and Commerce One's Commerce One.net systems — virtual marketplaces where businesses can pore through thousands of items and bid for them — that suppliers would be able to see the catalogs from buyers' perspectives to ensure the information was correct.

But for the most part, there has been no such visibility for CSN's 10,000 suppliers and half of Commerce One.net's 1,600 suppliers.

"It's idiotic to put a catalog up and not be able to look at it all and verify it's correct," says Terry DeLong, director of Internet development at Dale Electric. "It shocked me."

Dale, a Glens Falls, N.Y., distributor of electrical supplies, spent "in the low six figures" for software from Velosel to view its catalogs. Velosel formed recently when supplier software makers HubStorm and MartQuest merged.

Commerce One was in the process of developing technology for its SupplyOrder 3.0 order management software to ease the viewing problem, but Dale needed software immediately. SupplyOrder 3.0 is now being rolled out for Commerce One.net.

Meanwhile, Ariba is offering a temporary fix that would let suppliers view screen shots of its e-procurement software, Ariba Buyer, so they could see what it looked like to log on and search their catalog.

The vendor is working on separate tools to fix the catalog-viewing problem, though Ariba officials declined to say when it would be ready.

As of now, both companies offer Web sites that let suppliers see a production view of their content.

Jennifer Turcotte, Ariba's product marketing manager of supplier enablement, cites the challenges in building an interface that will properly show a supplier its catalog.

"The challenge has been, and will continue to be, that suppliers accessing this generic user interface will see a view that will not be the exact view that their Ariba Buyer customer sees," Turcotte says. A supplier's catalog will look different to its buyers based on each of its buyers' customized views.

But Josh Greenbaum, principal at Enterprise Applications Consulting, says Ariba and Commerce One aren't doing enough for tier-two and lower-level suppliers.

"Exchanges can't exist without suppliers . . . and Ariba and Commerce One aren't making it easy to get on board," he says.

Their offerings still lack an efficient way for buyers and suppliers to communicate with each other, such as sending purchase orders or exchanging quote information, says Richard Tsu, CIO of Ox International, a Houston maker of online catalog content management software.

Even when Ariba and Commerce One attempted to fix problems, such as by making it easier for buyers to go directly from an online marketplace to a supplier's Web site to find more information, there have been complaints.

An AMR Research report says Ariba's PunchOut and Commerce One's RoundTrip tools, which recently rolled out to address this direct connection issue, have their shortcomings.

For example, the software has had trouble working with third-party software and proven difficult to use for buyers searching across multiple suppliers' sites, says analyst Louis Columbus. More rules and specifications need to be built into the software, the AMR report says.

Steve Viarengo, Commerce One's director of solutions strategy, says RoundTrip can help buyers and suppliers communicate, but notes that suppliers need to establish communication with buyers on many fronts.

"RoundTrip isn't enough, but it's a valuable way for buyers and suppliers to do business in the market," Viarengo says.

Suppliers need to work with marketplace system vendors, such as Commerce One, and with other software vendors to ensure their sales, distribution and order management systems are in sync.

Despite concerns aired by experienced marketplace users, some newcomers are still willing to give the online systems a shot.

Hach, which designs and manufactures water quality analysis systems, anticipates joining CSN and Commerce One.net by year-end. The Loveland, Colo., company is also using Velosel's eSupplier, which has helped Hach syndicate its catalog of about 10,000 items to four private marketplaces.

Though marketplaces were all the rage last year, Hach took a cautious approach before selling its wares on them, says Derek Walker, the company's e-business manager.

"We weren't completely shocked that there weren't any returns immediately, but we were [disturbed] that it was quite a bit of a hassle to create and maintain catalogs," he says. ■

Will they survive?

Business-to-business software companies Ariba and Commerce One, which once boasted stock prices worth hundreds of dollars, are now fighting for their survival.

Both have bled red ink this year, with Ariba posting a loss of $273.5 million and Commerce One losing $2.06 billion in their most recent quarterly reports. Meanwhile, the companies have seen their stock prices plummet to around $2, shaken up their management teams and cut staff.

Speculation is rife that the companies — which face competitive, pricing and interoperability issues in addition to the technical issues — could get snapped up.

The names of companies from BroadVision (which also is losing millions of dollars) to IBM have been mentioned as possible suitors for Ariba, though the strongest rumors involve Manugistics, a supply-chain software maker that has also stumbled.

SAP, which in June pumped $225 million into Commerce One's coffers to expand its ownership in the company to 20%, is considered the most likely company to buy out Commerce One.

Observers say the pricing models pushed by the vendors, which include charging transaction fees and asking for close to $1 million for software projects, have proven unsustainable.

"The model is dying on the vine and I blame Ariba and Commerce One," says Joshua Greenbaum, principal of Enterprise Applications Consulting.

Observers say that even in the face of financial and competitive difficulties — increasingly, the likes of Oracle and PeopleSoft are invading their turf — Ariba and Commerce One continue to be stubborn about issues such as interoperability.

Neither company is making it easier for their platforms to work together, because each is developing its own XML specification. Ariba created cXML for its marketplace platform, while Commerce One developed xCBL, forcing businesses to buy software for either an Ariba-run marketplace or a Commerce One-run marketplace.

"Each and every one of these larger networks . . . has its own standards and nuances," says Richard Tsu, CIO at Ox International, an online catalog content management software maker in Houston. "This brings headaches for companies like us that deal with these multiple networks."

"Commerce One and Ariba will have trouble justifying their viability," Tsu says. "They are in a difficult spot: They do not offer what business users require, and they are waiting for the market to develop with a cost structure that is unworkable."

— Kathleen Ohlson

NetworkWorld
EDITORIAL DIRECTOR: JOHN GALLANT
EDITOR IN CHIEF: JOHN DIX

■ NEWS
EXECUTIVE EDITOR, NEWS: BOB BROWN
ASSOCIATE NEWS EDITOR: MICHAEL COONEY
ASSOCIATE NEWS EDITOR: PAUL MCNAMARA

■ INFRASTRUCTURE
SENIOR EDITOR: JOHN FONTANA
(303) 377-9057; Fax: (303) 377-9059
SENIOR EDITOR: JOHN COX
(978) 834-0554; Fax: (978) 834-0558
SENIOR EDITOR: DENI CONNOR
(512) 345-3850; FAX: (512) 345-3860
SENIOR WRITER: APRIL JACOBS, (603) 742-1789
STAFF WRITER: PHIL HOCHMUTH

■ NET.WORKER
MANAGING EDITOR: TONI KISTNER, (201) 587-0124

■ SERVICE PROVIDERS
SENIOR EDITOR: TIM GREENE
SENIOR EDITOR: DENISE PAPPALARDO,
(202) 737-7614; Fax: (202) 393-4291
SENIOR WRITER: MICHAEL MARTIN, (201) 556-1280

■ THE EDGE
MANAGING EDITOR: JIM DUFFY
STAFF WRITER: TERRI GIMPELSON, (603) 934-6002

■ ENTERPRISE APPLICATIONS
SENIOR EDITOR: ELLEN MESSMER,
(941) 792-1061
SENIOR EDITOR: CAROLYN DUFFY MARSAN,
(703) 917-8621; Fax: (703) 917-8622
SENIOR WRITER: JENNIFER MEARS,
(608) 275-6807; Fax: (608) 275-6814
SENIOR WRITER: KATHLEEN OHLSON
SENIOR WRITER: ANN BEDNARZ
STAFF WRITER: DENISE DUBIE

■ COPY DESK/LAYOUT
ASSISTANT MANAGING EDITOR: RYAN FRANCIS
SENIOR COPY EDITOR: IAN LAMONT
COPY EDITORS: BRETT COUGH, GREG CUSACK,
JOHN DOOLEY, MONICA HAMILTON

■ ART
DESIGN DIRECTOR: ROB STAVE
ART DIRECTOR: TOM NORTON
SENIOR DESIGNER: MICHELLE BARBERA
SENIOR DESIGNER: STEPHEN SAUER
GRAPHIC DESIGNER: LISA HOVSEPIAN
INFOGRAPHICS RESEARCHER: JACY EDELMAN

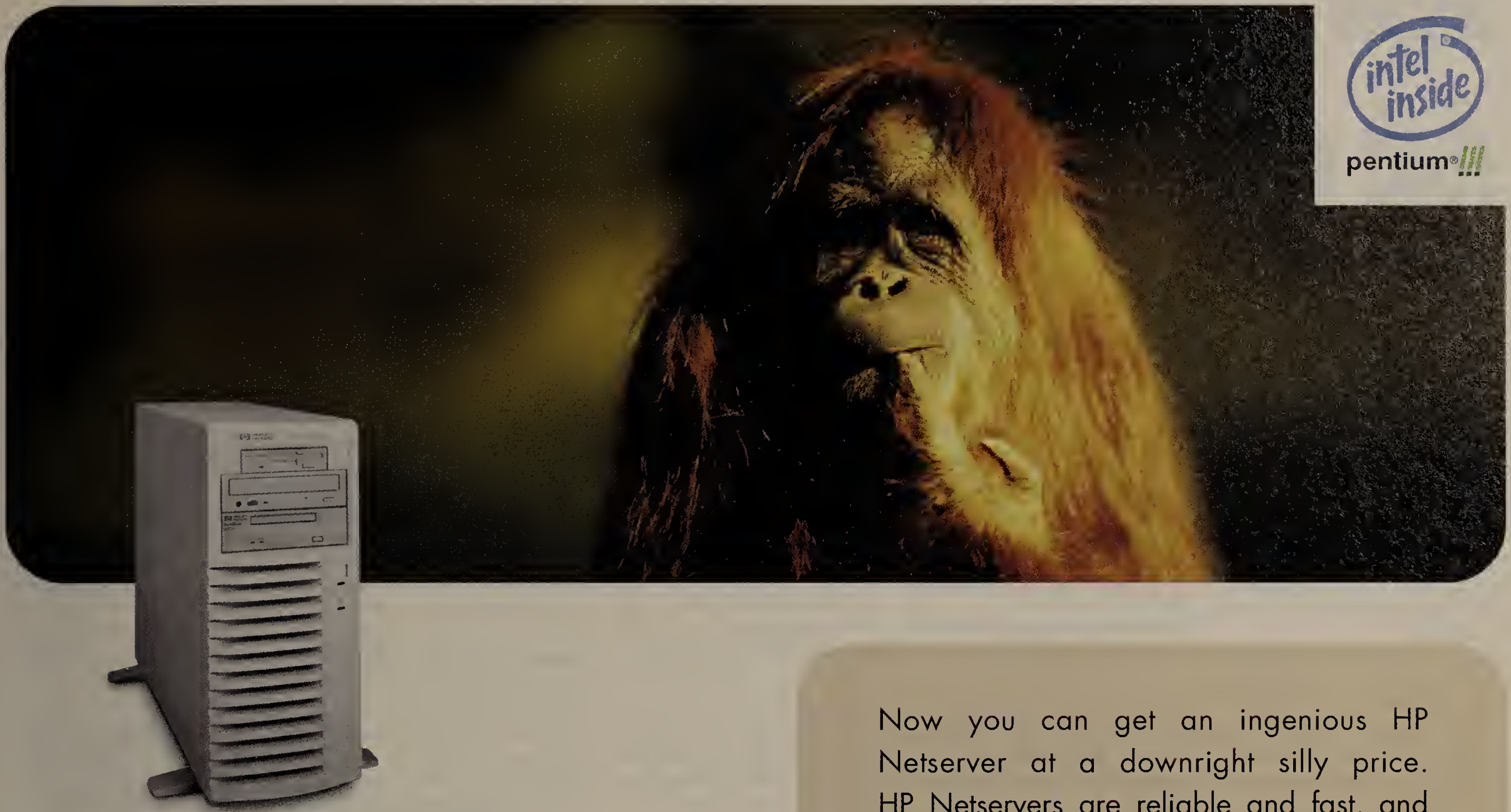
■ FEATURES
FEATURES EDITOR: NEAL WEINBERG
MANAGING EDITOR, FEATURES: AMY SCHURR
FEATURES WRITER: SHARON GAUDIN
OPINIONS PAGE EDITOR: SUSAN COLLINS
FEATURES WRITER: SUZANNE GASPAR

■ REVIEWS
TEST ALLIANCE DIRECTOR: CHRISTINE BURNS,
(717) 243-3686
SENIOR REVIEWS EDITOR: KEITH SHAW, (508) 490-6527
REVIEWS EDITOR: MIKE AVERY
TEST ALLIANCE PARTNERS: JOEL SNYDER, Opus One; DENNIS WILLIAMS, ProductReviews.com; JOHN BASS, Centennial Networking Labs; BOB CURRIER, Duke University; BARRY NANCE, independent consultant; THOMAS POWELL, PINT; EDWIN MIER, Miercom; THOMAS HENDERSON, ExtremeLabs; NTS/XXCAL; TRAVIS BERKLEY, University of Kansas; DAVID NEWMAN, Network Test; CHRISTINE PEREY, Perey Research & Consulting
CONTRIBUTING EDITORS: DANIEL BRIERE, MARK GIBBS, JAMES KOBIELUS, MARK MILLER

■ NETWORK WORLD FUSION
EXECUTIVE EDITOR, ONLINE: ADAM GAFFIN
MANAGING EDITOR: MELISSA SHAW
EVENTS EDITOR: SANDRA GITTLEN
MANAGING EDITOR, ONLINE NEWS: JEFF CARUSO,
(650) 577-2714; Fax (650) 358-4518
ASSOCIATE ONLINE NEWS EDITOR: JOANNE CUMMINGS
(978) 688-0109
MULTIMEDIA EDITOR: JASON MESERVE
ONLINE COPY CHIEF: SHERYL HODGE
ONLINE COPY EDITOR: CARRYL HAUSER
SENIOR WEB PRODUCER: MARLO MATOSKA
WEB PRODUCERS: CHRIS CORMIER, KRIS GUAY,
KATIE WARD
ONLINE ASSISTANT ART DIRECTOR: MEGHANA BHEDA
ONLINE GRAPHIC DESIGNER: ZACH SULLIVAN
ONLINE RESEARCHER: ELAINE VALOVIC

■ SIGNATURE SERIES
EDITOR: BETH SCHULTZ,
(773) 283-0213; Fax: (773) 283-0214
EXECUTIVE EDITOR: JULIE BORT,
(970) 468-2864; Fax: (970) 468-2348
COPY EDITOR: BRETT COUGH

EDITORIAL OPERATIONS MANAGER: CHERYL CRIVELLO
OFFICE MANAGER, EDITORIAL: GLENNA FASOLD
EDITORIAL OFFICE ADMINISTRATOR: PAT JOSEFEK
RESEARCH ASSISTANT: DEIDRA MASSENBERG
MAIN PHONE: (508) 460-3333
E-MAIL: first name_last name@nww.com



intel inside pentium® III

The hp netserver.

Developed by gifted engineers,

priced by someone else.

Now you can get an ingenious HP Netserver at a downright silly price. HP Netservers are reliable and fast, and feature Intel® Pentium® III processors. And Netserver has the memory and storage you need to keep your business up and running. For a limited time, get 0% apr financing* on selected e800 Netservers. HP's hottest servers at their lowest prices ever. Now that's savings you can rely on.

hp® invent

hp netserver e800

• Intel® Pentium® III processor 866MHz w/256KB L2 cache • 128MB ECC SDRAM • 9.1GB SCSI HDD • 40x Max-speed CD-ROM • 0% apr financing* available - contact your local reseller by calling 888.276.9876 or visit www.bstore.hp.com

$949

SKU P2458A

Offer ends October 31, 2001.

Call 1.800.243.9812, contact your local reseller, or visit www.hp.com/go/bizsku37

*0% apr financing based upon a 24-month financing term and subject to final HP credit approval. Minimum financed amount is $1500. More than one new server may need to be purchased to qualify. Estimated street price for the e800 P2458A is $949, e800 P2460A is $1499. Estimated monthly payment is $39 and $63 respectively. Actual prices may vary. Offer expires October 31, 2001. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. ©2001 Hewlett-Packard Company. All rights reserved.

Red Creek aims to automate VPN mgmt.

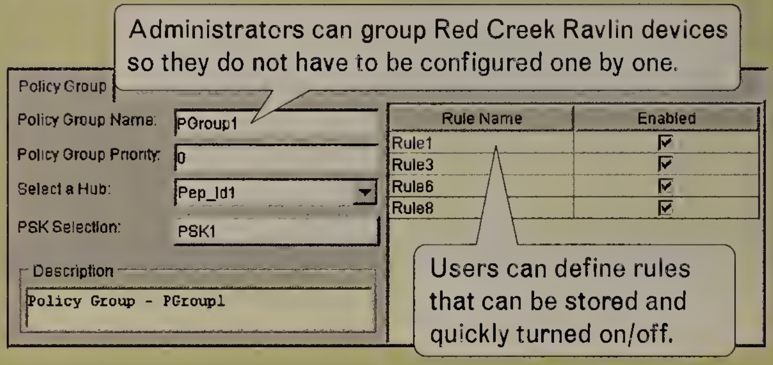
■ BY TIM GREENE

NEWARK, CALIF. — Red Creek Communications is introducing management software upgrades that make it easier to set up large enterprise VPNs and to make policy changes once the VPNs are up and running.

The latest version of its management software, ReD iAdmin 2.0, automates the distribution of policies to Red Creek's Ravlin firewall/VPN appliances, making it possible to set up and reconfigure 1,000 devices from a central workstation.

Policy power

Red Creek's new ReD iAdmin software enables automated distribution of policies among the company's Ravlin VPN/firewall appliances.



Administrators can group Red Creek Ravlin devices so they do not have to be configured one by one.

Policy Group

Policy Group Name: PGroup1

Policy Group Priority: 0

Select a Hub: Pep_Id1

PSK Selection: PSK1

Description: Policy Group - PGroup1

Rule Name	Enabled
Rule1	☑
Rule3	☑
Rule6	☑
Rule8	☑

Users can define rules that can be stored and quickly turned on/off.

This is a time saver compared with Red Creek's former Node Manager software, according to a Red Creek user who asked not to be named. It is possible to change policies for 10 Ravlin devices in the time it would have taken to do the same for one device using Node Manager, he says. The user's network has 40 Ravlin devices for a corporate VPN as well as connections with business partners.

Streamlining and automating policy distribution is a trend among VPN vendors including Check Point Software, WatchGuard Technologies and NetScreen.

New to Red Creek's ReD iAdmin 2.0 is ReD iClick, which lets your network adiministrators set firewall and VPN policies for remote Ravlin devices using a graphical user interface. These policies are then translated into instructions for each remote machine. The policies are automatically stored in a Lightweight Directory Access Protocol database for use later.

These policy instructions are then sent by ReD iSync, software that sits on the central management server. If remote devices are connected to the VPN, ReD iSync will push the policy changes to them. If not, ReD iSync pushes the changes the next time the remote machine connects. ReD iSync also notifies each Ravlin device of changes in IP address by other Ravlins in the network.

Another addition to ReD iAdmin 2.0 is ReD iCom, software for each Ravlin that stores configuration profiles. So if a user moves from site to site with the same Ravlin machine, the machine will configure itself based on the new connection. One Ravlin could store the profile for connecting to the VPN via PPP or via PPP over Ethernet, depending on the type of Internet connection being used.

ReD iCom is also used by Red Creek's latest device, Travlin Ravlin, to enable it to fail over from a dedicated DSL or cable-modem connection to a dial-up connection.

ReD iAdmin 2.0 is available Oct. 15. It costs $6,000 for 100 devices; $15,000 for 500 devices; and $29,000 for 2,000 devices.

Red Creek: www.redcreek.com

Vendors plan new breed of storage systems

■ BY DENI CONNOR

NetworkWorld 10 Companies to WATCH

Four well-funded start-ups will introduce scalable and efficient high-end storage systems in the next 12 months that could improve network performance and make it easier to manage disparate storage resources.

The storage systems from YottaYotta, Zambeel, Cereva and 3PARdata allow customers to logically group storage resources for management, provisioning and fault-tolerant support. The idea is to let an IT organization virtually manage all the storage in its network so that the storage can be apportioned among different departments, and managed and billed on a utility basis from a single console.

Analysts say storage hardware market growth is being fueled by the overwhelming increase in computerized data. Meta Group says storage expenses will consume two-thirds of IT budgets by 2003.

Such forecasts explain the rise of storage start-ups, which are striving to differentiate themselves from each other and established players. The four start-ups' systems differ from high-end storage arrays from EMC and Hitachi Data Systems (HDS) in the amount of data they can store. For instance, Cereva's storage system will handle data capacities of 230 terabytes to one petabyte. The Zambeel and YottaYotta systems will manage as much storage as is connected to them. EMC's largest Symmetrix scales to 69.5 terabytes; HDS' Lightning 9900 has an upper capacity of 37.3 terabytes.

"With new high-end architectures coming in from the likes of 3PARdata, Cereva, YottaYotta and possibly others, even EMC will need to make some serious architectural changes" to its storage arrays to support these capacities and capabilities, says Arun Taneja, an analyst with Enterprise Storage Group.

The new products are designed in one of two ways. The Zambeel and YottaYotta systems connect to existing direct-attached storage systems, NAS appliances or Fibre Channel-based, SAN equipment via Gigabit Ethernet, Fibre Channel or SCSI connections. On the other hand, the Cereva and 3PARdata systems replace existing storage systems and sit on the network along with other storage devices and servers.

The vendors are offering a multitude of features. For example:

- Zambeel is designing a scalable cluster of hardware storage gateways, called compute modules, that connect to storage arrays, and just-a-bunch-of-disks and NAS devices, via Gigabit Ethernet, Fibre Channel or SCSI connections. The Zambeel systems will let the data on devices they attach to be combined into a common pool of storage over a wide-area network.
- YottaYotta says its NetStorage system will consist of an 8U (14-inch-high) chassis enclosing 12 storage blades that contain cache memory and connect to existing direct-attached, NAS or SAN storage, and YottaYotta's rack-mounted storage arrays. The NetStorage system will connect to the network via an optical fiber-optic connection running Gigabit Ethernet or Fibre Channel. It also will be able to join existing storage into a pool of virtualized storage so customers can better utilize and control NAS, SAN and direct-attached storage data.
- Cereva says its Cereva 5000 is an expandable storage array that can handle NAS, SAN and HTTP data, as well as streaming media. It also incorporates Fibre Channel switching technology, thus alleviating the need to purchase separate Fibre Channel SAN switches. Future arrays will exceed one petabyte of capacity and handle NAS file-oriented data and native HTTP, FTP and streaming media.
- 3PARdata acknowledges that it is also manufacturing a large, expandable storage system that is similar to the Cereva 5000 and replaces existing storage.

Pricing of the individual storage systems is not available.

3PARdata: www.3pardata.com; Cereva Networks: www.cereva.com; YottaYotta: www.yottayotta.com; Zambeel: www.zambeel.com

Storage onslaught

A slew of new fault-tolerant systems could help large companies manage and provision storage resources.

Company	Product	Description	Funding	Investors include
Zambeel	Z-Series	Expandable storage server	$27 million	Kleiner Perkins Caufield & Byers, New Enterprise Associates
YottaYotta	NetStorage	Expandable storage server	$51 million	Banc of America Securities, Davenport Capital Ventures
Cereva	Cereva 5000	Internet data storage server	$110 million	Comdisco, Intel
3PARdata	Code-named "Scaffold"	Carrier-class storage servers	$121 million	Mayfield Fund, Worldview Technology Partners and Oracle Ventures

intel inside
pentium® III

Sale-priced facelifts bad.

Sale-priced computers good.

Tired of too-good-to-be-true sale prices making you look bad? Then you'll love the deals HP is offering on Vectra desktop computers. Vectra is easy to manage and support, and uses an Intel® Pentium® III processor to give you the speed and power you crave. With 128MB of RAM, HP's Vectra is powerful, smart, and won't leave you grimacing.

hp vectra VL400

- Intel® Pentium® III processor 933MHz
- 128 MB SDRAM • 20GB Ultra ATA/66
- Intel Direct 3D AGP • 48x Max-speed CD-ROM • 10/100 integrated LAN
- Microsoft® Windows® 98

$899

SKU P4379T

Offer ends October 31, 2001.

hp®
invent

HP PCs use genuine Microsoft Windows
www.microsoft.com/piracy/howtotell

Call 1.800.243.9812, contact your local reseller, or visit www.hp.com/go/bizsku37

Price is estimated street price. Actual price may vary. Monitor not included. Photographs may not accurately represent exact configurations priced. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation. Microsoft and Windows are either registered trademarks or trademarks of the Microsoft Corporation in the United States and other countries. ©2001 Hewlett-Packard Company. All rights reserved.

CRM painkiller debuts

■ BY ANN BEDNARZ

MILPITAS, CALIF. — Start-up iTenol says its new service can slash customer relationship management procurement time by two-thirds and reduce software acquisition costs by 20% to 35%.

The company's CRM Solution Acquisition Manager, announced last week, automates the phases involved in selecting and implementing a CRM package, from defining a firm's requirements and evaluating vendors to negotiating contracts and generating purchase orders.

CEO Jay Prakash saw a need for a software procurement product during his years as a consultant. "The pain was always the same," Prakash says. "Requirements were not defined properly, and they selected the wrong vendor. I thought, there has to be a better way."

Once the service is in place, users collaborate to define business objectives and generate a request for proposal (RFP). Remote users with varying access rights can collaborate on the RFP documents.

iTenol notifies vendors when an RFP is available, and vendor representatives can collaborate online to respond. The service is free for CRM vendors. Prakash says iTenol has lined up 35 CRM vendors to participate, but declined to identify them.

Post-purchase, iTenol provides Web-based project management tools to help customers deploy the software. Additional services include business process modeling and professional consulting.

■ PROFILE: ITENOL

Location:	Milpitas, Calif.
Founded:	1999
Product:	CRM Solution Acquisition Manager, software for procuring enterprise apps.
Founder/CEO:	Jay Prakash
Employees:	15
Fun fact:	iTenol is a play on Tylenol, for its pain-killing effect.

Brian Jones, an analyst with The Yankee Group, says there's a need for a product such as iTenol's — if it truly addresses the complexities of CRM procurement.

The CRM selection process is difficult because of the range of available applications, the complexity of a CRM implementation and the number of people in an organization who need to be involved in the decision, Jones says. "It's a very fragmented market," which makes it tough for firms to find the right vendor, he says. "Any software that adds clarity would certainly be helpful."

iTenol's CRM Solution Acquisition Manager is available now as a hosted service. It costs $30,000 for six months of online access for up to 20 users. iTenol is offering a $10,000 discount to companies that sign up by Oct. 31.

iTenol: www.itenol.com

Following the tragic events of
September 11, the entire team of
Network World, Inc., would like to
express our deepest sympathies to
the victims, their families and their
friends. Our thoughts are with you.

❦

We know many Network World readers
are interested in helping out the victims
of the terror attacks on September 11.
Network World will match up to $5,000
in reader contributions to the
United Way's September 11th fund.
To learn more about that fund go to
september11fund.org/epledge/sept11.cfm

NetworkWorld

Nimda

continued from page 7

"If you were hit by Nimda and Code Red, it means you can't keep up with the patches on Microsoft and your boat is leaking," Pescatore says. "You should change your server to iPlanet or Apache."

It seems the worst computer viruses only target Microsoft. That, even though 19% of the 18 million Web sites on the Internet are based on Microsoft software vs. 62% based on Apache, according to Netcraft. Microsoft has had so many vulnerabilities to exploit, it "represents low-hanging fruit" for virus writers and hackers, Pescatore says.

Get more information online.
DocFinder: 6161

Organizations not using Microsoft Web servers, such as the Internet weather site Weather.com, watched Nimda pound away with IP scans but weren't too worried about it. "We don't use IIS, we use Apache, so we're safe as far as our Web server is concerned," says Dan Agronow, vice president of quality control and site operation at Weather.com. "Of course we have IT staff running around to make sure we have the right antivirus updates, too."

Some analysts say Microsoft, as the dominant software company, needs to help its customers better cope with managing the software patch challenge as the security risk grows with the new generation of powerful worms. "Microsoft needs to help customers better understand when to apply patches or not," says Predictive's Skoudis.

But some security experts disagree. Microsoft is doing all it can by having the Windows Update feature in all its software since Windows 98, and last month it posted free tools to help analyze vulnerabilities with its applications (see story, below), says Roger Thompson, TruSecure's technical director of malicious code. "There's not much else they can do.

"If you had patched your Web servers, you would have been OK," Skoudis says. "We recommend updating the browser in general every three months." ■

Security
Subscribe to our free newsletter.
DocFinder: 5434 www.nwfusion.com

Tools to check on patch compliance

With Nimda, another in a series of worms exploiting known vulnerabilities in Microsoft server and client software, one of the questions becomes: What can IT executives do to automate the task of verifying they have the latest software patches?

Of course, it would be easier on IT not to have Microsoft software filled with such vulnerabilities, but that is not the current reality. Roger Thompson, TruSecure's technical director of malicious code, says Microsoft is doing all it can to get companies to install patches.

Last month, Microsoft released two free tools that help identify vulnerabilities in its software.

HFNetChk is a command-line tool that scans Windows NT4 and 2000 machines for missing or installed patches for the operating system, Internet Information Server 4.0, IIS 5.0, SQL Server 7.5 and 2000, and Internet Explorer 5.01 and later. Shavlik Technologies developed it for Microsoft.

The other tool, Personal Security Advisor, is software for Win 2000 and NT desktops that scans for missing security patches, weak passwords, Internet Explorer and Outlook Express security settings, and Office macro protection settings.

Microsoft also has a Web page at windowsupdate.microsoft.com that scans systems and recommends updates, including patches. Also, Microsoft's next version of System Management Server — due out next year — will include the ability to check patch compliance on servers and desktops, and distribute software. Other vendors such as Novell, Tivoli Systems and Computer Associates have software to automatically install patches.

Third-party vendors also offer software that can scan for patches, report on known vulnerabilities or help restore systems. Offerings include:

- ConfigureSoft's Enterprise Configuration Management, which places an agent on each server and desktop that reports to a central repository on installed patches and other configuration settings.
- Bindview's bv-Control, which performs security assessments and audits across Windows and other platforms.
- PatchLink's PatchLink Update, server-side software that scans a network and reports on missing patches. Patch updates can then be distributed automatically, installed and machines can be rebooted, if necessary, by PatchLink agents.
- Ecora's MyEcora, which reports on installation data and versions of patches with a focus on security. The software generates plain-English documents detailing configuration settings on servers and databases.

— John Fontana

The leader in network knowledge

NetworkWorld FREE Subscription Application

☐ **YES** I want to receive/continue to receive my FREE subscription to *Network World.* **No, thank you.** ☐

Sign Here
Signature (required) Date

TO QUALIFY: You must supply your company name and address. If military, please specify branch/base. If government, please specify division.

Name Title

Company

Division/Mail Stop/Military Branch or Base

Street Address

City State Zip

Business phone (_____)

FAX (_____)

E-mail address

We would like to send you periodic information via e-mail on 3rd party networking products/services.
☐ Check here if you DO NOT wish to receive this information.

If there is a parent company, please provide name:
☐ My home address is also my business address.

Optional delivery address: Enter your home address below if your company will not accept delivery at your business address:

Street Address

City State Zip

Publisher reserves the right to serve only those individuals who meet publication qualifications. ALL questions must be answered. Incomplete forms will not be processed. Free subscriptions available to qualified US applicants. International rates available upon request.

B901

1. What is the principal business activity at your location?

(check ONE only)

- 01.☐ Manufacturing (Non-Computer/ Communications/OEM)
- 02.☐ Finance/Banking
- 03.☐ Insurance/Real Estate/Legal
- 04.☐ Health Care Services
- 05.☐ Hospitality/Entertainment/ Recreation
- 06.☐ Media/TV/Cable/Radio/Print
- 07.☐ Retail/Wholesale Trade/Business Services
- 08.☐ Transportation
- 09.☐ Utilities/Process Industries (Mining/Construction/ Petroleum Refining/ Agriculture/Forestry)
- 10.☐ Government/Military
- 11.☐ Consulting (Independent) *
- 12.☐ Education
- 13.☐ Carriers/Voice/Data/ISP
- 14.☐ Web Hosting/HSP
- 15.☐ ASP/SSP/MSP
- 16.☐ Manufacturing (Computer/ Communications/OEM)
- 17.☐ Resellers/VARs/VADs/ Integrators/Distributors* (Computers/Communications)
- 18.☐ Other (please specify) ____________

*Attn Consultants, Integrators, Distributors, Resellers: Please complete form based on ALL clients and your own business needs

2. P: What is your primary job function? (check ONE only) S: What additional job functions are you involved in? (check ALL that apply)

P S

- ☐ 1. ☐ Network Management
- ☐ 2. ☐ CIO/CTO/IS/IT/MIS/ Systems Management
- ☐ 3. ☐ LAN Management
- ☐ 4. ☐ Datacom/Telecom Management
- ☐ 5. ☐ Internet/Intranet/Web/ E-Commerce Management
- ☐ 6. ☐ Engineering Management
- ☐ 7. ☐ Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
- ☐ 8. ☐ Consultant (Independent)
- ☐ 9. ☐ Other (please specify) ____________

3. What is the estimated value of network equipment and services that you specify, recommend, or approve the purchase of?

(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A-0.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/ Workstations)*
C ____ Mobile *(including PDAs, Wireless)*
D ____ Servers
E ____ LANs
F ____ WAN Equipment
G ____ Carrier Services
H ____ Internet/Web/E-commerce
I ____ Intranet/Extranet
J ____ Internetworking *(including Routers, Switches)*
K ____ Storage
L ____ Remote Access
M ____ Peripherals
N ____ Software
O ____ Service/Support Services

4. What is the total number of sites for which you have purchase influence?

(check ONE only)

1. ☐ 100+ 2. ☐ 50 to 99 3. ☐ 20 to 49 4. ☐ 10 to 19 5. ☐ 2 to 9 6. ☐ 1 7. ☐ None

8. Please indicate the Web/Security/LAN/Internetworking/Wireless/Mobile/WAN Equipment/Carrier Services that you are currently involved in purchasing or plan to purchase:

(check ALL that apply) A. Currently involved in purchasing B. Plan to purchase

WEB

A B

- ☐ 01. ☐ Web Servers/Software
- ☐ 02. ☐ Web Traffic Management
- ☐ 03. ☐ Electronic Commerce Tools
- ☐ 04. ☐ Web Development Tools
- ☐ 05. ☐ Web Content Management
- ☐ 06. ☐ Web Collaboration/ Groupware
- ☐ 07. ☐ Web Acceleration/Caching/ Load Balancing
- ☐ 08. ☐ Web Hosting Services
- ☐ 09. ☐ Other

SECURITY

A B

- ☐ 10. ☐ Firewalls
- ☐ 11. ☐ Anti-Virus Software
- ☐ 12. ☐ Private Key Encryption Tools
- ☐ 13. ☐ DES Encryption Tools
- ☐ 14. ☐ Authentication Tools
- ☐ 15. ☐ Intrusion Detection
- ☐ 16. ☐ Certificate Authorities
- ☐ 17. ☐ Biometrics
- ☐ 18. ☐ Other

LANs/INTERNETWORKING

A B

- ☐ 19. ☐ Fast Ethernet
- ☐ 20. ☐ Gigabit Ethernet
- ☐ 21. ☐ Layer 3-7 Switches
- ☐ 22. ☐ ATM Switches
- ☐ 23. ☐ Routers
- ☐ 24. ☐ Network Attached Storage (NAS)
- ☐ 25. ☐ Storage Area Networks (SANs)
- ☐ 26. ☐ Storage Backup (Optical, Disk, Tape, RAID)
- ☐ 27. ☐ Network Test/Diagnostic Tools
- ☐ 28. ☐ Uninterruptable Power Supplies (UPS)
- ☐ 29. ☐ Network Interface Cards (NICs, PCMCIA)
- ☐ 30. ☐ Hubs/Intelligent Hubs/ Stackable Hubs
- ☐ 31. ☐ Cables,Connectors, Baluns
- ☐ 32. ☐ Wiring/Fiber Systems
- ☐ 33. ☐ Net Management Systems
- ☐ 34. ☐ Voice Over IP (VoIP) Tools
- ☐ 35. ☐ Network Analyzers
- ☐ 36. ☐ Other Local-Area Network/ Internetworking

WIRELESS/MOBILE

A B

- ☐ 37. ☐ Wireless LANS
- ☐ 38. ☐ Wireless/Cell Phones
- ☐ 39. ☐ Wireless LAN Extension Tools
- ☐ 40. ☐ Mobile Data Equipment/Services
- ☐ 41. ☐ PDAs
- ☐ 42. ☐ Other Remote/Wireless

WAN EQUIPMENT

A B

- ☐ 43. ☐ Frame Relay Equipment
- ☐ 44. ☐ Bandwidth Managers
- ☐ 45. ☐ Bandwidth Shaping/QOS Tools
- ☐ 46. ☐ VPN Equipment
- ☐ 47. ☐ ATM Switches
- ☐ 48. ☐ Voice/Video over IP Gateways
- ☐ 49. ☐ Modems
- ☐ 50. ☐ Cable Modems
- ☐ 51. ☐ xDSL Products
- ☐ 52. ☐ Diagnostic/Test Equipment
- ☐ 53. ☐ DSUs/CSUs
- ☐ 54. ☐ PBXs
- ☐ 55. ☐ Call Center Tools
- ☐ 56. ☐ Videoconferencing Gear
- ☐ 57. ☐ ISDN Equipment/Services
- ☐ 58. ☐ Other WAN Equipment/Services

CARRIER SERVICES

A B

- ☐ 59. ☐ Internet Access
- ☐ 60. ☐ Private Lines
- ☐ 61. ☐ Frame Relay Services
- ☐ 62. ☐ ADSL/DSL
- ☐ 63. ☐ T-1/T-3 Services
- ☐ 64. ☐ ATM Services
- ☐ 65. ☐ Managed Services
- ☐ 66. ☐ VPN Services
- ☐ 67. ☐ LAN-Extension Services
- ☐ 68. ☐ OC-3/OC-12
- ☐ 69. ☐ Wavelength Services
- ☐ 70. ☐ Dark Fiber
- ☐ 71. ☐ Other Carrier Services

None of the above (1 – 71) A ☐ 72. ☐ B

9. Please indicate the Systems/Peripherals/Software/Applications/Business Services that you are currently involved in purchasing or plan to purchase:

(check ALL that apply) A. Currently involved in purchasing B. Plan to purchase

SYSTEMS/PERIPHERALS

A B

- ☐ 01. ☐ Laptops/Notebooks
- ☐ 02. ☐ Desktops
- ☐ 03. ☐ Intel-Based Servers
- ☐ 04. ☐ Risc-Based Servers
- ☐ 05. ☐ Print Servers
- ☐ 06. ☐ Fax Servers
- ☐ 07. ☐ Remote Access Servers
- ☐ 08. ☐ Video Servers
- ☐ 09. ☐ Mid-Range Systems (including workstations)
- ☐ 10. ☐ Mainframes
- ☐ 11. ☐ Printers
- ☐ 12. ☐ Enclosures/Racks/Furniture
- ☐ 13. ☐ Other Computers/ Peripherals

SOFTWARE/APPLICATIONS

A B

- ☐ 14. ☐ Desktop/Server Operating Systems
- ☐ 15. ☐ Network Management
- ☐ 16. ☐ Systems Management
- ☐ 17. ☐ Directory Services
- ☐ 18. ☐ E-Mail
- ☐ 19. ☐ Groupware
- ☐ 20. ☐ Database Management Systems
- ☐ 21. ☐ Customer Resource Management (CRM)
- ☐ 22. ☐ Enterprise Resource Planning (ERP)
- ☐ 23. ☐ XML Tools
- ☐ 24. ☐ Desktop Videoconferencing
- ☐ 25. ☐ Middleware
- ☐ 26. ☐ Document Management Tools
- ☐ 27. ☐ Site Metering Tools
- ☐ 28. ☐ Software Distribution Tools
- ☐ 29. ☐ Data Warehousing
- ☐ 30. ☐ Applications Development Tools
- ☐ 31. ☐ Other Software/Applications

BUSINESS SERVICES

A B

- ☐ 32. ☐ Application Service Provider Services
- ☐ 33. ☐ Systems Integration/ Consulting
- ☐ 34. ☐ Education/Training Services
- ☐ 35. ☐ Other Services

None of the above (1 – 35) A ☐ 36. ☐ B

10. Please indicate the platforms that are currently installed/planned:

(check ALL that apply) A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A B

- ☐ 01. ☐ TCP/IP v4
- ☐ 02. ☐ TCP/IP v6
- ☐ 03. ☐ SNA/APPC/APPN/LU6.2
- ☐ 04. ☐ Novell IPX/SPX
- ☐ 05. ☐ NETBIOS/NETBUEI
- ☐ 06. ☐ NFS
- ☐ 07. ☐ Other Network Protocols

LAN/WAN ENVIRONMENT

A B

- ☐ 08. ☐ Gigabit Ethernet
- ☐ 09. ☐ Switched Ethernet
- ☐ 10. ☐ Fast Ethernet
- ☐ 11. ☐ Ethernet
- ☐ 12. ☐ ATM
- ☐ 13. ☐ Token Ring/Token Ring Switching
- ☐ 14. ☐ Layer 3-7 Switching
- ☐ 15. ☐ FDDI
- ☐ 16. ☐ Fibre Channel
- ☐ 17. ☐ Wireless LANs
- ☐ 18. ☐ DSL
- ☐ 19. ☐ ISDN
- ☐ 20. ☐ Frame Relay
- ☐ 21. ☐ Private Line T1, T3, OC-3, OC-12
- ☐ 22. ☐ Other LAN/WAN Environment

DESKTOP/SERVER OPERATING SYSTEMS

A B

- ☐ 23. ☐ Windows 2000
- ☐ 24. ☐ Windows 95/98
- ☐ 25. ☐ Windows NT/Windows 2000
- ☐ 26. ☐ Novell (NetWare 5.X, 4.X, 3.X, 2.X)
- ☐ 27. ☐ LINUX
- ☐ 28. ☐ Intel Based UNIX
- ☐ 29. ☐ RISC Based UNIX (incl. SOLARIS)
- ☐ 30. ☐ IBM MVS/VM/VSE/ESA
- ☐ 31. ☐ OS/400
- ☐ 32. ☐ Digital VMS
- ☐ 33. ☐ Macintosh
- ☐ 34. ☐ Palm OS
- ☐ 35. ☐ Windows CE
- ☐ 36. ☐ Other Network Operating System

None of the above (1– 36) A ☐ 37. ☐ B

Continued on next page...

Continued from page one...

5. **What is the total number of Servers/Clients installed/planned at your location/in your entire organization?** (check ONE box in each column)

SERVERS At Location A		SERVERS Entire Org. B	CLIENTS At Location C		CLIENTS Entire Org. D
☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. None	☐	☐	8. None	☐

6. **What is your scope and involvement in purchasing decisions for network products and services for your enterprise?**

A. Scope (check ONE only)

CORPORATE/ENTERPRISE:
1.☐ Entire Enterprise/Multiple Enterprises
2.☐ Multinational Enterprise
3.☐ Division/Multiple Divisions
4.☐ Department
5.☐ None

B. Involvement (check ALL that apply)

1.☐ Create Network/IT Strategy
2.☐ Recommend/Specify Brand
3.☐ Approve Purchase
4.☐ Evaluate Products/Services
5.☐ Determine the Need
6.☐ None

For faster service, subscribe online at:
http://www.nwwsubscribe.com/pb901

7. **What is the estimated number of employees in your entire organization/at your location?** (check ONE in each section)

A. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

B. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

11. **Which of the following hardware platforms are installed/planned in your company?** (check ALL that apply)

A - Servers
1. ☐ IBM (Mainframes)
2. ☐ IBM RS/6000
3. ☐ IBM AS/400
4. ☐ Compaq/Digital/Tandem
5. ☐ Unisys
6. ☐ H-P
7. ☐ Other

B - Workstations/Desktops/Laptops
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Compaq/Digital
4. ☐ IBM
5. ☐ Dell
6. ☐ Gateway
7. ☐ Fujitsu
8. ☐ Other

12. **What is the estimated gross revenue of your entire company/institution?** (check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or Less
10. ☐ None of the above

13. **For which areas outside of the U.S.A. do you have purchase influence?** (check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

▼ 1. FOLD HERE & MAIL TODAY ▼

Sign Up and Start Immediately Receiving our FREE Weekly e-Newsletter *This Week on NWFusion* and easily stay current on today's networking challenges!

☐ **YES!** Start my subscription immediately. My e-mail address is:

____

Your colleagues may also qualify for a FREE subscription!

Please list below names and job functions of other individuals at your location who might also benefit from a FREE subscription to NetworkWorld

NAME ________________ JOB FUNCTION ________________ E-MAIL ADDRESS ________________

NAME ________________ JOB FUNCTION ________________ E-MAIL ADDRESS ________________

NAME ________________ JOB FUNCTION ________________ E-MAIL ADDRESS ________________

NAME ________________ JOB FUNCTION ________________ E-MAIL ADDRESS ________________

▼ 2. FOLD HERE & MAIL TODAY ▼

FORM 0002

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO 1752 NORTHBROOK IL

POSTAGE WILL BE PAID BY ADDRESSEE

The leader in network knowledge
NetworkWorld
PO BOX 3091
NORTHBROOK IL 60065-9928

Infrastructure

- TCP/IP, LAN/WAN SWITCHES
- ROUTERS ■ HUBS
- ACCESS DEVICES ■ CLIENTS
- SERVERS ■ OPERATING SYSTEMS
- VPNS ■ NETWORKED STORAGE

Vendors fortify integrated Web devices

Multifunction Web acceleration appliances feature switching, load balancing, security and streaming support.

■ **BY APRIL JACOBS**

Future integrated Web acceleration appliances could be a boon for network professionals looking to reduce the number of devices in their networks and ease installation, management and maintenance of large-scale environments.

A slew of companies during the past few weeks have announced Web acceleration products aimed at speeding content delivery to end users from the Web, e-commerce sites and corporate intranets. Many of these products will offer users integrated feature sets they previously have had to buy separate devices to get.

Among the companies making these integrated device announcements are F5 Networks, FineGround Networks, SpiderCache and Surgient Networks. F5 and Surgient plan to ship products that combine switch capabilities with traditional Web acceleration features, such as load balancing, caching, secure transaction processing — also called Secure Sockets Layer (SSL) off-loading — and, in Surgient's case, streaming. The companies hope the integrated devices will give them a leg up on multidevice offerings from NetScaler, Akamba, CacheFlow, Cisco, Network Appliance and Nortel.

SpiderCache and FineGround now offer dynamic content cache products, which let customers store content that is frequently accessed for faster delivery to end users. FineGround's Condenser 3.0 appliance is designed to give IT managers a way to reduce bandwidth costs by eliminating the need for redundant page downloads from repeat end-user requests for Web site content. Condenser 3.0 also features integrated SSL off-loading capabilities.

F5 Networks' Big-IP 5000 will combine many features currently available only in separate Web acceleration devices.

For its part, SpiderCache says it is looking to bundle its caching and content delivery products onto a single appliance in an effort to meet users' demands for fewer devices to manage.

SpiderCache's Enterprise 2.0 cache device lets IT managers cache not only static content, but also dynamic content. Dynamic content has the most potential to cause Web server overload because it requires a Web server to continually compile images and text on the fly. SpiderCache is also planning to release a beta version of its SpiderCast content delivery software that is offered as a standalone package or preloaded onto an appliance. SpiderCast will compete with Akamai Technologies' content delivery network products. Both are aimed at letting Web site managers deliver and manage the content they send out over their networks.

FineGround's Condenser 3.0 has integrated SSL processing capabilities, a feature FineGround CEO Nat Kausik says customers often require for e-commerce. Competitor CacheFlow also offers an integrated caching/SSL-off-loading appliance.

Michael Hoch, an analyst with Aberdeen Group, says multifunction appliances will help customers simplify the setup of their Web acceleration infra-

Web acceleration, page 22

Short Takes

■ **Allied Telesyn** recently announced two Gigabit network adapters for servers or workstations, aimed at companies looking to take advantage of falling prices for Gigabit Ethernet equipment. Allied's 1000Base-SX and 1000Base-T server adapters can send Gigabit-speed traffic over 550 meters of single-mode fiber or 100 meters over Category 5 or 6 copper cabling, respectively. The network interface cards (NIC) are priced much lower than Allied's previous Gigabit adapters, which cost $600 to $1,200 for copper or fiber versions.

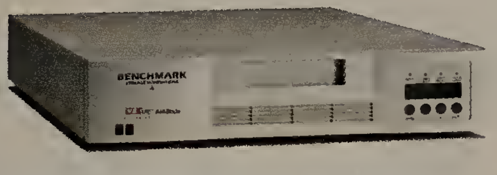
Both PCI-based NICs support features such as 802.1Q virtual LAN tagging for identifying 64 VLAN segments in a network. The NICs can also sense slower 10M and 100M bit/sec Ethernet connections. The copper-based AT-2930T costs $200, and the fiber-based AT-2930SX is priced at $500. Both NICs are available now. www.alliedtelesyn.com

■ **Alchemy Lab** has rolled out software that can monitor the availability and accessibility of servers on a network. Alchemy Eye Version 2.7 monitors ping,TCP/IP, HTTP, URL and HTTPS traffic, as well as Microsoft NT service states and the changes to the NT Event Log. The software can also launch external applications and restart a remote computer if a server goes down.

Alchemy Eye runs on Windows 95, 98, ME, NT and 2000 workstations. It can send alerts via e-mail, cell phone, pager or ICQ in the event of network problems. The software costs $200. www.alchemy-lab.com

Benchmark device eases automated data backup

■ **BY DENI CONNOR**



Benchmark's ValueSmart Tape 640 Blade holds up to eight tape cartridges and can back up 640G bytes of compressed data.

Benchmark Storage Innovations last week rolled out one of the industry's first compact, rack-mounted storage devices that can back up and recover information from multiple preloaded storage tapes, saving companies space in floor-space constrained data center environments.

The ValuSmart Tape 640 Blade, known as a tape autoloader, is a 2U (3.5-inch-high) device that automates the back-up process by preloading up to eight tapes, saving IT staff the tedious loading and reloading of tapes required for a nightly backup.

Tape autoloaders are typically large square boxes that connect to a server or Fibre Channel-based storage-area network (SAN) and sit on a desk or shelf rather than having to be mounted in industry-standard racks like servers and network gear, according to analysts.

"Anything that improves space efficiency and form factor is good news," says Tony Prigmore, an analyst with Enterprise Storage Group. "Every IT department wants to save space over the long run."

Capable of backing up as much as 640G bytes of compressed data, the ValuSmart Tape 640 Blade holds up to eight Digital Linear Tape (DLT)-format cartridges. An IT professional could use one tape for each day of the week and the eighth for a tape-cleaning cartridge, or span the nightly backup over multiple tapes, thus saving manual tape reloading. Customers could also back up a number of servers to a single autoloader, one server to each tape in the device.

Multiple 640 Blades can be daisy-chained in a rack, and each can be managed from an LED console on the front of the device, as well as off-the-shelf back-up software from companies such as Veritas, Legato and Computer Associates.

The autoloader connects to a network server via a SCSI connection or to a SAN with a Fibre Channel-to-SCSI router.

Benchmark says the 640 Blade competes with existing DLT autoloaders from vendors such as Dell and Tandberg, as well as disk drive vendors. From a price standpoint, it fits between Digital Audio Tapes and DLTs and is compatible in price with some standalone tape drives, the company says.

The device will be available next month for less than $4,500.

Benchmark: www.4benchmark.com

6 PARIS
STOCKHOLM 6
NEW YORK 6
6 SINGAPORE
FRANKFURT 6
SYDNEY 6
6 LONDON
MONTREAL 6
6 ZURICH
6 HONG KONG
AMSTERDAM 6
6 SAN JOSE
6 TORONTO

get NetWare 6.
now your Network
is just a browser away.

Need access from Australia? Want to print from Prague? Get the freedom of NetWare® 6. As part of Novell's one Net vision, NetWare 6 lets your users have access to their file, print and other storage resources from any browser in the world, anytime. So no more lugging laptops to Latin America. All they'll need is any computer with an Internet connection. That's it. And that's the beauty of one Net. So take this as a sign and visit **www.novell.com/netware6** to learn more.

Novell
the power to chaNge™

© Copyright 2001 Novell, Inc. All rights reserved. Novell and NetWare are registered trademarks and the power to change is a trademark of Novell, Inc., in the United States and other countries.

WIRED WINDOWS

Dave Kearns

Disaster recovery: Are you ready?

Now that the initial shock of Sept. 11 has passed, it's time — well past time — to revisit your own disaster-recovery planning in light of what happened at the World Trade Center. Especially important, in retrospect, is redefining the scope of a possible disaster.

In a very good article published in Novell's AppNotes in September 1999 ("A Disaster Recovery Strategy for Mixed NetWare 4/5 Environments," http://developer.novell.com/research/appnotes/1999/septembe/03/index.htm), author Phillip Moulay wrote, "Many of the disaster-recovery solutions available on the market work on the assumption that you will be restoring data onto the same hardware from which it was lost. However, in full disaster scenarios, it is rarely the case that the network administrator ends up with the same equipment."

Dust off your disaster-recovery plan — does it provide for the loss of all your equipment? All of your building? It is not pleasant to contemplate, but what would your company do in the event that you and your entire department were wiped out? Someone might know where your off-site back-up tapes were located, but who, and do they have access? If there are tapes, who has information about which archive software was used to create them? Who knows which platforms they were running on and which platforms they need to be restored to?

A well-documented disaster-recovery plan includes all this information, it's true. But will anyone be able to find your plan? Is a copy stored securely off-site with the archived tapes as well as in another location? Who knows that, who knows where it is, and who has access to it?

If all your infrastructure is destroyed, where will you go to replace it? Is there a back-up facility waiting? Do you have vendors, and back-up vendors, ready to ship to you at a moment's notice? Does anyone know the details except you?

On the other hand, what happens if the IS department is all that's left after a major disaster? Executive management, sales, marketing and even finance are gone, but the network servers are still going. Does your company have a plan?

I don't have all the answers. Each situation will be different. What works for your competitor might not work for you.

No one is safe from disaster, though, so you had better be sure your plans are up to date. There's rarely a second chance in disaster recovery.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the Week

Although geared toward natural disasters, the U.S. Department of Energy's **Operation Fresh Start** contains lots of references to information about recovering from full disasters. Start researching at www.sustainable.doe.gov/freshstart/business.htm.

Hewlett-Packard has powerful midrange server on tap

BY APRIL JACOBS

Looking to bring mainframe-like performance and capacity to its midsize server family, Hewlett-Packard last week took the wraps off a new 16-way midrange server built around the company's Unix operating system.

The rp8400 server bridges the gap between HP's existing Reduced Instruction Set Computing-based offerings and its high-end Superdome server. Specifically, the rp8400 will offer support for two to 16 pa8700 processors — double the capacity of the company's current midrange — as well as two hard partitions and as many as 16 virtual partitions. The hard partitions will let customers run more than one operating system on the same system, a feature traditionally available only on a mainframe. For now, the rp8400 will only support multiple versions of HP-UX, but HP says it plans to add support for Windows in 2003.

HP says it will keep selling its eight-way, or eight-processor, midrange server, redubbed the rp7400.

Rich Rankin, a senior systems administrator for Clarke County in Washington, says he is interested in the rp8400's ability to run multiple versions of HP-UX. Currently, operating system upgrades require him to take systems off-line.

If he had a server that could accommodate multiple versions — such as the rp8400 — those types of upgrades wouldn't be necessary.

Rankin is also interested in looking at the rp8400 as a potential way to consolidate the county's server farm. Clarke County has several single- and dual-processor servers. Rather than purchase new models when it is time to upgrade, he says a single rp8400 would replace multiple machines and may be able to support additional applications. The server is now being considered for Oracle financial applications.

More server power

HP says it has taken the capabilities of its high-end Superdome server, such as partitioning, and brought them down to its new HP Server rp8400. The rp8400:

- Can use up to 16 HP PA-RISC processors, making it a significantly more powerful server than the company's current eight-way rp7400.
- Will use 650 MHz and 750 MHz PA-RISC 8700 chips.
- Will run Version 11i of the company's HP-UX operating system.

Users will also be able to take advantage of pay-as-you-go pricing with the rp8400. With a baseline of eight processors, users can get a fully configured 16-way system and pay for usage beyond eight processors only when they use them.

The rp8400 will serve as a next-step server to HP's existing rp7400 server. IBM offers a 24-way server, the p680, which also has some mainframe capabilities, such as partitioning. HP's other competitor in the midrange Unix server market is Sun's 6800, which is a 24-way server.

All three vendors have reduced the cost of their lower-end servers in recent months. In HP's traditional pricing method, an entry-level system starts at $124,000 and goes up to $1.7 million.

For HP, midrange sales are important because they make up the bulk of the company's server revenue. IBM and Sun dominate the higher-end segment of the market.

HP also plans to include technology that can help correct errors in a computer's memory. In addition, HP made its CPU boards upgradable, letting customers switch from PA-RISC to Intel's Itanium processor family at a later date.

HP says that using its utility pricing model, a 16-way server would cost $49,400 per month, but users who need less can get incrementally lower pricing based on how many CPUs they actually use.

IDG News Services contributed to this story.

Servers
Subscribe to our free newsletter.
DocFinder: 5434 www.nwfusion.com

Web acceleration

continued from page 19

structures and avoid some of the pitfalls that come with integration. For example, instead of having to consider a load-balancing appliance from one vendor and turning to another for switches and yet another for caching, users can get all those functions from one and, in theory at least, manage those tasks with a single application.

At Whirlpool, Condenser 3.0 is being tested in connection with the firm's planned move to Web-based Lotus iNotes for 14,000 users.

"As we upgrade our e-mail system, we are trying to keep network costs down, and this could save us from pushing entire refreshes across our pipes as people access e-mail," says John Macko, director of network services for the company. In addition, he hopes the product improves performance. Because iNotes uses a Java compiler to construct page views, which takes time, sending only new portions of page views to end users' desktops should speed delivery, he says.

The flip side

The potential downside to integrated products, Hoch says, is that users may not have as many options to customize these multifunction products to suit their individual needs.

Hoch compares buying a multipurpose appliance to buying a boom box vs. individual stereo components. In some cases — and he says these products are so new that it's hard to tell — users may get some features in a multipurpose box that offer better performance and quality than others in that same device.

More online!
Get the latest Web acceleration news.
DocFinder: 6142

YOUR EXISTING CAT-5 NETWORK.
(WHEN YOU USE INTEL® PRO GIGABIT SERVER ADAPTERS.)

©2001 Intel Corporation. Intel is a trademark or registered trademark of Intel Corporatio [illegible] aries in the United States and other countries. All rights reserved.

Gigabit capability on your current Cat-5 network isn't a pipe dream. With Intel® PRO/1000 T Server Adapters you can increase your bandwidth capacity by a massive ten times. These gigabit adapters work with your existing 10/100Mbps network and will seamlessly ramp up to 1000Mbps. And they're not just super-fast. They're super-flexible. Intel PRO/1000 T Server Adapters offer advanced server features like load balancing and fault tolerance across multiple operating systems. Intel® PRO Network Connections, the intelligent way to connect. For more information and a trial kit, visit intel.com/network/go/cat5/

intel.

You see two building-to-building connections.

The smart choice is the one you don't see.

The high-capacity network connection installed in days versus months.

Introducing The New Wire. The fastest, easiest way to connect your buildings. Just one call and you can get all the capacity you need, from 10 Mbps to 430 Mbps. How did we develop a wire this advanced? For starters, The New Wire is no wire at all.

WESTERN™
Multiplex

Get your free price quote online at:
wmux.com/freequote
Or call 1-888-810-2600.

[illegible] Western Multiplex and the Western Multiplex [illegible] product [illegible] subject to change without not[illegible]

Enterprise Applications

- INTRANETS ■ MESSAGING/GROUPWARE
- E-COMMERCE ■ SECURITY ■ VPNs
- NETWORK MANAGEMENT ■ DIRECTORIES

Vendors bolster self-service software

Web-based customer service software from Jeeves, Motive saves money.

■ BY CAROLYN DUFFY MARSAN

Despite sluggish corporate IT spending, Web-based self-service software is picking up steam and helping companies cut their technical support or customer service costs by letting users answer their own questions via the Web rather than by telephone.

Among the companies announcing enhancements this week are search specialist Jeeves Solutions and tech support vendor Motive Communications.

Self-service software can be used to assist customers on external Web sites or employees on intranets. Increasingly, the software features leading-edge artificial intelligence and analytic capabilities in addition to hooks into other customer relationship management (CRM) packages.

Help yourself

Web-based self-service software lets users answer their own questions via the Web. Some recent product improvements include:

Company	Announcement	What's new	Ship date
Jeeves Solutions	Jeeves One enterprise package	Natural language processing, analytics with customer insight	Sept. 24
Motive Communications	Motive for Employee Support	Built-in service activation, standards support, broader content sourcing	October

Self-service investment

Vendors and industry analysts report that companies are continuing to invest in self-service tools — which cost $100,000 or more — because they offer an immediate return on investment.

"It costs less to serve people online vs. what it costs to field a telephone call or answer an e-mail," says Allen Bonde, director of management consulting at Extraprise, a CRM consultancy.

"This technology has moved from the outer fringes to the mainstream over the last six to 12 months," he says.

Among the companies that purchased self-service software in recent months are AT&T Broadband, EarthLink, 3Com, SBC Communications and Logitech.

A new customer of self-service is Aspect Communications, a San Jose maker of call center software. Aspect began rolling out self-service software from start-up noHold Communications to its tech support staff earlier this month and will soon make the capability available to its customers.

"Our customers want to be able to do more on their own, and they want to do it in a Web environment," says Tom Neary, director of support technology at Aspect.

"While this won't make the proverbial phone call go away, it will enable the phone call to become a more intimate, value-added tool," he says.

With noHold's software, Aspect created a "knowledgebase" out of its existing technical data, customer notes and software patches. Aspect's customers will

See Self-service, page 30

www.nwfusion.com
More online!
See how Jeeves' software works via a Flash demo.
DocFinder: 6141

IBM adds biz features to WebSphere

■ BY KATHLEEN OHLSON

SOMERS, N.Y. — IBM last week introduced a version of its WebSphere Commerce software that offers business users real-time collaboration, order and inventory management, supply-chain management, real-time chat and collaboration, and customized invoicing.

WebSphere Commerce Business Edition 5.1, includes Lotus software — Sametime and Quickplace — letting buyers and suppliers negotiate terms and discuss specifics of an order in a real-time, private electronic workspace.

The package also includes WebSphere Application Server and DB2 Universal Database.

The offering features a business relationship manager, a browser-based interface that lets business policies and contracts be modified. For instance, an account manager could customize catalogs, pricing and terms and conditions for a certain buyer, rather than rely on an IT staff to make the changes.

The software also lets an organization set up a hierarchy of secure access to features and functions, so employees are allowed entry into certain areas.

WebSphere Commerce Business Edition runs on Windows 2000 and NT. It will be available early next year in other languages, such as Japanese, simplified and traditional Chinese, and Spanish, It also will be available on other platforms, including Solaris.

Shawn Willett, an analyst at Current Analysis, says globalization support is one of the key offerings of the new IBM software, but the company is missing some elements.

"They need an overarching tool that gets business processes linked into the back-end system," such as accounting or a manufacturing system, Willett says. Currently, IBM offers separate tools for this function, which requires customers to perform more maintenance.

He also says IBM needs to integrate its portal into the business edition because customers generally put their channel interfaces through portals.

The new features will help IBM more effectively compete with competitors ClickCommerce, BroadVision and Art Technology Group.

Pricing for WebSphere Commerce Business Edition starts at $125,000 per processor. The package will be available Nov. 30.

IBM: www.ibm.com

E-commerce
Subscribe to our free newsletter.
DocFinder: 5434 www.nwfusion.com

Short Takes

■ **Novell** and **Yahoo** announced last week that Novell's eDirectory will be used as the default software with Yahoo's corporate portal. Corporate Yahoo is designed for companies interested in building Web sites and other network-based services. Yahoo, until recently, used Netscape's iPlanet directory software with its portal offering. Adding eDirectory gives Corporate Yahoo users identity management capabilities and allows greater personalization of information. It also simplifies identities, relationships and portals management, Novell says. www.yahoo.com; www.novell.com

■ **Baltimore Technologies** has upgraded its access and authorization server, SelectAccess 3.5, adding support for the HP-UX operating system and directories, including Novell eDirectory and Siemens DirX. SelectAccess 3.5, which costs $20 per user, lets managers establish single sign-on capability for users across multiple domains. www.baltimore.com

■ **Art Technology Group** this week will announce the Enterprise Commerce Suite that would offer customer profiling of business-to-business customers, workflow applications for order approvals and support for complex purchasing and ordering. The package will include Dynamo Application Server, Dynamo e-Business Platform and Control Center. Pricing for the Enterprise Commerce Suite, which will be available Sept. 30, starts at $130,000 per CPU.

©[illegible] Riverstone Networks [illegible] are [illegible] Riverstone [illegible] of the NASDAQ Stock Market. [illegible] trademarks [illegible] to their [illegible] owners. NASDAQ® RSTN

METRO ROUTER WITH MPLS.
ALL IN 5 RACK UNITS.

Introducing the RS 16000 from Riverstone Networks. It's the new generation of router built expressly for Gigabit and 10-Gigabit Metropolitan Area Networks. The chassis-based RS 16000 delivers up to 60 wire-speed Gigabit ports, along with 10-Gigabit Ethernet and CWDM uplinks all in 5 rack units – that's 70% more Gigabit ports per rack inch than the nearest competitor. For service providers, this means more revenue per rack and lower operating costs.

But the RS 16000 is more than the highest density router in the industry. As a full function, Internet-caliber metro-optimized router, it also delivers rich service creation capabilities. Through hardware-based MPLS, bandwidth carving, and extensive billing and accounting, the RS 16000 converts raw bandwidth into profitable services for carriers throughout the Metropolitan Area Network.

Contact Riverstone Networks at 1-877-778-9595 or visit riverstonenet.com to see how we're changing the rules in the Metro.

River
STONE
NETWORKS

Bandwidth with Brains™

NetworkWorld Review

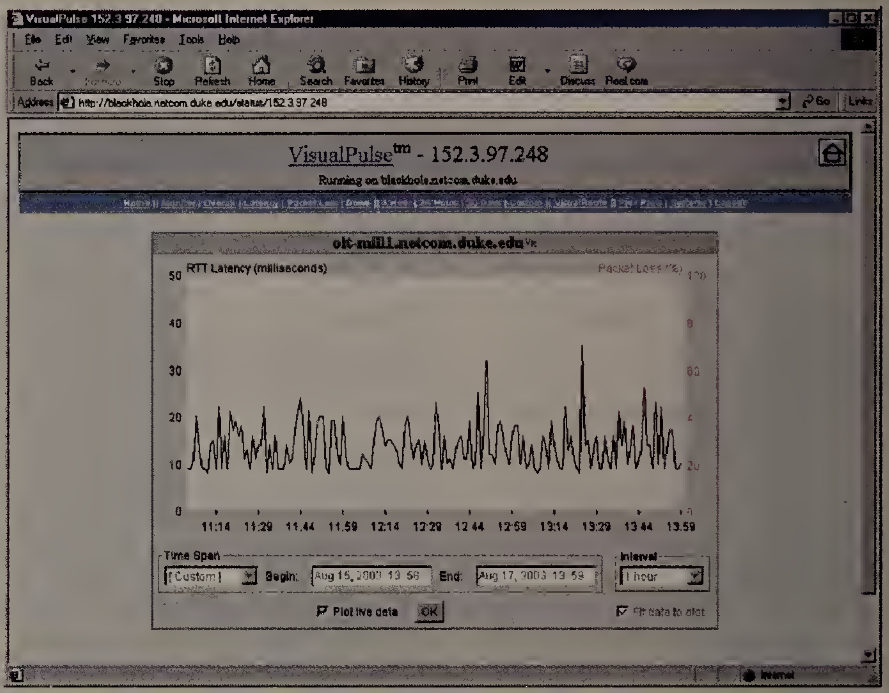
Be impulsive

Visualware's VisualPulse 1.7

Visualware's VisualPulse 1.7 provides network managers with a top-notch tool for monitoring packet loss and latency.

■ BY BOB CURRIER, NETWORK WORLD GLOBAL TEST ALLIANCE

Keeping a finger on the pulse of numerous enterprise applications and network links can raise the blood pressure of even the fittest network manager. Trying to diagnose network anomalies and pinpoint problem areas when all you have to work with are statements such as "the network is slow" can be an exercise in frustration. Having real-time and historical statistics on packet loss and latency across the enterprise would be a lifesaver.



VisualPulse 152.3.97.248 - Microsoft Internet Explorer

http://blackhole.netcom.duke.edu/status/152.3.97.248

VisualPulse™ - 152.3.97.248

Running on blackhole.netcom.duke.edu

oit-mill1.netcom.duke.edu

Time Span: [Custom] Begin: Aug 15, 2003 13:58 End: Aug 17, 2003 13:59 Interval: 1 hour

☑ Plot live data OK ☑ Fit data to plot

VisualPulse makes it easier to access real-time and historical statistics for individual systems.

Front end the statistics with a snappy graphical interface and you would have a winning combination. And that's what Visualware has delivered in VisualPulse 1.7: a winning combination of statistics and graphical interface that should be in every network manager's bag of tricks. VisualPulse has taken the place of our home-brewed diagnostic tools because it is easier to use and more powerful than the tools we had cobbled together. A less expensive, but more limited, tool we have used is Nessoft's PingPlotter. We liked PingPlotter, but it doesn't offer the ability to monitor multiple sites, or have a Web-based interface like VisualPulse's, which let us use VisualPulse from anywhere.

Net Results

WORLD CLASS WINNER

VisualPulse 1.7

4.8 RATING

Company: Visualware, (866) 847.9273, www.visualware.com **Price:** Ranges from $300 for 10 monitored elements to $2,250 for 250 monitored elements. **Pros:** Easy to install; fast graphical interface; rock-solid reliability; great documentation; excellent reporting facilities; supports Unix and Windows. **Cons:** Limited to ICMP for monitoring.

What's the score?	VisualPulse 1.7
Functionality 40%	4.5
Ease of use 35%	5
Reliability 10%	5
Installation 10%	5
Documentation 5%	5
TOTAL SCORE	4.8

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

VisualPulse 1.7 is a network-monitoring tool that provides network managers with detailed statistics on packet loss and latency. VisualPulse sends Internet Control Message Protocol (ICMP) ping packets at regular intervals and measures packet loss and round-trip time. While this technique works well in most cases, it doesn't work in every instance. Many sites block ICMP packets, thus preventing VisualPulse from reaching its intended destination. We found this to be only a minor inconvenience.

VisualPulse is Web server-based and operates on Linux and Windows platforms. While VisualPulse supports Windows 95, 98 and Millennium Edition, Visualware recommends deploying VisualPulse on a Windows 2000 server in an enterprise environment.

A feature of VisualPulse that we found particularly attractive was its minimal client requirements. If you have a Java-enabled browser you can access all of the reporting and configuration options of VisualPulse. VisualPulse requires Microsoft's Java VM build 5.00.3167 or later, and the use of Internet Explorer is recommended.

VisualPulse 1.7 earns our World Class award for its ability to monitor packet loss and latency, its e-mail notification features, snappy graphical interface, ease of installation and rock-solid stability.

Watching the wires

We're big believers in putting reviewed products to the ultimate test: deployment in a production environment. Tests in a controlled laboratory environment are fine, but we've found that some products behave differently when subjected to the chaos of a 30,000-node enterprise network.

Shortly after we received our copy of VisualPulse our network crew was summoned to diagnose intermittent application slowdowns at an off-campus location. The site was connected to the campus through a 10M bit/sec Ethernet over an ATM metropolitan-area network. Users at the remote site complained of application timeouts, dropped sessions and network sluggishness. The users blamed the network and the service provider blamed the users.

We installed VisualPulse on a RedHat 7.2 Linux platform located on our backbone and configured it to monitor multiple devices on the off-campus network. After several days of testing we used the historical reporting features of VisualPulse to conclusively demonstrate to the users that the LAN and the WAN link were performing perfectly. It's hard to argue with a graph that shows a 0% dropped packet count and a latency of less than 20 msec. The problem was the configuration settings on the application server. Without the statistics provided by VisualPulse, we could easily have spent several weeks in "finger-pointing" mode.

See Visualware, page 30

YOU CAN ONLY BE IN
THREE PLACES AT ONCE.

PRESENTING WIRELESS MOBILITY FROM COMPAQ.

Our wireless solutions keep you in the loop. Even when you're outside of it. The new Compaq *Evo*™ Notebook N400c is one of the thinnest, lightest portables around. With a mobile Intel® Pentium® III processor and innovative MultiPort,[*] the N400c gives you modular wireless capability to access your network, send e-mail or check stocks from anywhere.[†] All at unbelievable speed. Plus, get big access from the small iPAQ Pocket PC and you'll still have room for the Compaq microportable projector that fits in the corner of your briefcase.

intel inside
pentium® !!!

INNOVATIVE PRODUCTS,
INTEGRATED INTO SOLUTIONS &
DELIVERED GLOBALLY

to find out more go to compaq.com/mobile
or call 1-800-888-5846

Compaq PCs use genuine Microsoft® Windows®
www.microsoft.com/piracy/howtotell

[*] Wireless LAN capability currently available; wireless WAN/PAN (Bluetooth®) projected availability beginning 3rd quarter 2001. [†] Subject to wireless network coverage. ©2001 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq logo are registered trademarks of Compaq Computer Corporation. Evo is a trademark of Compaq Information Technologies Group, L.P. Inspiration Technology is a trademark of Compaq Information Technologies Group, L.P. in the U.S. and other countries. Intel, the Intel Inside logo, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

COMPAQ
Inspiration Technology

'NET INSIDER

Scott
Bradner

When comprehension fails

Due to publication deadlines, I'm writing this column a few days after the horrific events in New York, Washington, D.C., and Pennsylvania, and it is very hard to concentrate. While this is not the place to write of my feelings about the events themselves, I cannot ignore them here. It is clearly not the time to write about copyright, ATM or many of the other things I normally address. It's hard to figure out what to write about — about the only thing I can think of that may be germane and appropriate for this publication is how the U.S. telecommunications infrastructure dealt with the events.

The Internet performed quite well and the phone network less well. There was a spike in internet traffic Tuesday morning but it was well within the ability of most ISPs to handle, so there were few performance problems. The traffic level then dropped to below normal daily levels. The New York City and Washington, D.C., areas, along with the San Francisco area, make up the three biggest sources of Internet traffic. Major disruptions in two of them coupled with the impact on the general workforce would be expected to reduce demand.

In addition, almost no ISPs had significant outages. While the Internet transport infrastructure handled the load well, Internet-based servers did not.

Many Internet news sites were quickly overwhelmed and some had to follow their contingency plans to reduce or eliminate graphics on their Web sites to make response times at all reasonable. The Internet was the major news source of the events for millions of people, while the major TV networks seemed to revel in replaying endlessly scenes of slow motion death. Nanog, the major mailing list for network operators, had so much traffic that it was running as much as one-and-a-half hours late.

The phone network did not fare so well. Soon after the first crash, lines all over the East Coast overloaded, and it became impossible to even get a dial tone in some places. E-mail and instant messaging were the only reliable ways to communicate, but they only worked for people with non-dialup access because the phone network overload prevented people from accessing their service providers.

Harvard President Lawrence Summers said during a multifaith vigil in Harvard Yard that, "When comprehension fails, we must turn to each other." This is what I have been doing this past week. I have spent a lot of time hugging the one I love and being thankful none of my friends or colleagues were directly affected. I pray that is also the case with you.

Disclaimer: I do not speak for the university, but based on what I've seen these past few days, I'm sure the prayers are shared.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached sob@sobco. com.

Visualware,

continued from page 28

Serving up statistics

The VisualPulse home page is extremely well laid out. All the functions needed to configure and operate VisualPulse are grouped into status, report and tool headings. The status group is the heart of VisualPulse, containing links to a listing of all systems being monitored, critical latency and packet loss reports, and the system monitor.

The system-monitor page provides a scrolling display of the response time and packet loss for each system VisualPulse is watching. If less than five packets have been lost, the host name is highlighted in yellow. If more than five packets are lost it turns red. Packet loss is indicated by a vertical red bar, and latency by a vertical black bar. This page was so well laid out that we could glance at it and get an immediate sense of network health.

Clicking on a host listed on the system monitor page brings up a real-time graphical display of latency and packet loss. Historical statistics are accessible from the same screen choosing a time interval of last hour, last day, last week or last month.

VisualPulse provides a simple-to-use e-mail notification feature that we really liked. Plug in your mail server host name and the e-mail address you want alerts sent to and you're ready. And don't worry about using long-winded status reports on your pager. Check the "suppress headers" and "suppress duplicates" boxes and VisualPulse limits message contents to the most important details.

With the number of bad guys hacking away on the Internet, network managers might be nervous about putting a list of critical systems and network performance statistics where everyone can see it. Don't worry — VisualPulse gives administrators a robust set of security options to keep the black hats from gaining access to vital network statistics. Administrators can define IP address-based access lists by using a combination of access verbs and network addresses. There are three access verbs: deny, full and super. "Deny" prevents the listed IP address from any access to VisualPulse. "Full" lets users access all features, and "super" gives full access and the ability to connect even when the maximum number of concurrent users has been exceeded.

Installation and documentation

The installation process was simple and well documented, and we didn't encounter any problems. We also installed an X Window virtual frame buffer that VisualPulse needs to run in the background as a daemon process.

The documentation for VisualPulse is excellent. Visualware provides an online frequently asked questions and user's manual that is well written and superbly illustrated with screenshots. We easily found answers to all our questions and didn't have to call technical support.

VisualPulse's combination of functionality, reliability and low cost earn it our World Class award and make it a definite "must have" for an enterprise network manager.

At press time Visualware announced the release of VisualPulse.

Currier is the ECI director of data and telecommunications at Duke University in Durham, N.C., and the 1998 grand-prize winner in the Excellence in Campus Networking competition sponsored by CAUSE, a user group for computer professionals in higher education. He can be reached at robert. currier@duke.edu.

How we did it

We installed VisualPulse Version 1.7 on a RedHat 7.1 Dell Optiplex server with dual Pentium III-600 processors and 512M bytes of memory. We placed the server on a Gigabit Ethernet port on our enterprise backbone and configured it to monitor 20 systems located both on and off site.

We allowed the VisualPulse server to operate for several weeks in order to test reliability, functionality and e-mail notification. The VisualPulse application consumed little CPU time and never crashed during our test period.

www.nwfusion.com

More online!

- How we did our tests

DocFinder: 6056

Global Test Alliance

■ Currier is also a member of the Network World Global Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

Self-service

continued from page 25

use noHold's simple, natural language interface to answer their questions by querying that knowledgebase. Meanwhile, noHold provides real-time statistics to Aspect's tech support staff on the performance of the software.

NoHold's software "will provide increased customer satisfaction and shorter time to [problem] resolution as well as allow us to roll out more complex products without additional hiring," Neary says.

Crowded market

The market for self-service tools is crowded, with leaders Primus Knowledge Solutions and Kana Communications recently beefing up their offerings by purchasing rivals with natural language processing and analytics.

Other vendors targeting this market include eGain Communications and RightNow Technologies, as well as venture-funded start-ups noHold, iPhrase Technologies and Kanisa.

The continued strong investment in self-service software is prompting innovation by all the major players. For example, the following announcements were due this week:

- Jeeves, a spin-off from the popular Web site Ask Jeeves, will ship its first enterprise software package called Jeeves One. Until now, Jeeves offered hosted question answering services to companies such as Compaq, Dell and RadioShack. Jeeves One features advanced natural language processing and analytical capabilities, which let companies learn more about what their customers want. The first customer is Compaq.
- Motive, which provides self-service tools for corporate IT help desks, will unveil a product that provides broader business support to employees.

Enhancements include the ability to embed help in applications, error messages and dialog boxes. Motive for Employee Support uses external content such as other Web sites, and it supports Microsoft's Windows Installer Service.

The first customer for Motive for Employee is Target. ■

Net.Worker

PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Telework top 10 wrap up

With our series behind us, the author offers some updates and reader comments.

BY STEVE JANSS

Of course, hindsight is always 20-20. Here we provide you with some timely updates and share some reader comments.

- In response to Part 2's "Shopping for speed," Joshua Wise, a digital media analyst with Allied Business Intelligence, offered some useful comments concerning Wild Blue's upcoming satellite service. Wild Blue's promised upload speed (0.5M bit/sec) is less than I reported back in April. However, the download speed will indeed be 3.0M bit/sec — that's right, about six times faster than your average cable or asymmetric DSL modem.

I hope Wild Blue will soon clarify its cost structure. If service comes in at around $70 per month with free or low-cost installation, it'll open up the world of fast access to countless remote users who've made do with dial-up. But if Wild Blue charges more, or exorbitant dish and install fees, most will simply wait for something better.

Al Woolf, executive director of network support for ValueOptions, reminded me that Hughes' Direcway (formerly DirecPC) two-way satellite broadband service is now here. But at $1,000 for the dish and installation, and $70 per month for service, it's not in everyone's budget. Starband's option is also available; although the service costs are the same, installation is 40% less than Direcway's. Then again, Starband's throughput is slower, more in line with cable modem and asymmetric DSL.

- Since Part 3's "Protecting the home front" appeared in May, I've received countless pitches from companies claiming to provide "rock-solid personal firewalls for your home PC." Realize, no firewall is foolproof against attack. Some low-end products provide only basic security: network address translation (NAT) and simple port-closing schemes, while proven solutions from Network-1 Security Solutions, Check Point, Symantec and ZoneLabs provide a much greater degree of protection, as well as detailed administration controls. The first two are terrific for centrally managed workstations (even teleworkers, via integrated VPNs). The latter are good for machines teleworkers manage themselves.

However, NAT does play an important role in protecting your home-office networks. Joseph Gibbs of the SANS Institute discusses stealth mode in his SANS Institute article "The Virtues of Security Through Obscurity" (www.sans.org/infosecFAQ/securitybasics/obscurity.htm). While using a "stealth mode" won't stop an attack, the idea of not being seen will often prevent one from starting. That's where NAT comes in. NAT substitutes a client's TCP/IP address with that of the NAT router, entering the substitution in a table, and making certain changes to the packet, including the IP address and TCP checksums.

WRAP UP
TELEWORKING TOP 10
An ongoing series designed to help set up your teleworkers for their small-office or home-office networks.

- Feedback on Part 4's "Make sure you don't get zapped!" made my day. Joshua Feinbur, editor of Smallbiztechtalk.com, wrote about the "challenges of 'stranded' teleworkers," and reminds us that "no one from the help desk can run down the hall every four hours to help them." Even more reason to protect your teleworkers' CPUs and peripherals from power problems. A properly sized uninterruptible power supply will almost always save you more money than it costs.

- If there's one thing I've learned since Part 5's "Getting Gear for Teleworkers" debuted in June, it's to insist on a detailed cost analysis before opting for a lease. Some have exception clauses that could cost you dearly later on. One of the most straightforward, leasing rate structure is offered by Infinity Data Products.

- Part 6's "Controlling communications costs" explored ways to consolidate communications costs. When your teleworker is mobile, or communicates extensively with customers, it pays to search for alternatives to myriad phone, fax and network lines found in a typical teleworking office. To this end, Cisco recently launched Unified Communications, an open architecture for providing ISPs the ability to offer a single solution for voice, e-mail and fax devices.

www.nwfusion.com

More online!
See our online chart for a guide to setting up teleworkers.
DocFinder: 6145

- In Part 7's "Cat 5 vs. wireless: Pros and cons," L. Jacek commented that the average teleworker can install three network jacks for "just a few dollars," instead of the several hundred I quoted.

I disagree, unless you're limiting your installation to a desktop device with exposed wiring. Even the simplest patch panel will cost you around $50. As for the labor, time is money, whether that time belongs to your teleworker or the network installer you've hired.

- Since Part 8's "Shopping with peripheral vision" ran, I've seen little update on peripherals — save the rapid price drop of flat panel displays, down about $100 to $582 for a 17-inch TFT. Having used Sun's 18.1-inch LCD monitor (driven by Sun's Ray 1 appliance) for a three-week stretch, I'm sold. I also like flat-panel displays from IBM and Samsung. However, graphic artists will want to stick with traditional CRTs.

- Since the debut of Part 9's "Home-office Ergonomics Made Easy," a three-week long overseas business trip kept me away from the computer much of the time. As a result, my repetitive-stress injuries have improved. Moral of the story — take a vacation! Good furniture certainly helps, too.

- Last comes Part 10's Application ABCs. I hear Microsoft's XP sales are lagging expectations. Then again, XP's additional features are incremental, so most people seem content to stick with 2000, or even NT 4.0. Just remember to keep the service packs up to date — and that Microsoft always halts service pack upgrades upon releasing a new product.

By using an older operating system that Microsoft is no longer supporting with security updates and service packs, you're leaving yourself wide open to the latest hacker exploits. If security is an issue, it pays to upgrade.

Janss is the president of Jansys Information Systems, a consulting firm specializing in IS technologies for small businesses. He can be reached at bizcom@jansys.com.

Short Takes

- **MCK Communications,** at NetWorld+Interop 2001 in Atlanta, announced its MobileConneX PBX-gateway, a device that extends the features of the corporate PBX to cell phones. Mobile users dial in to the gateway from a cell phone, and provide authentication and a dial-back number. The gateway then routes all incoming calls, and lets mobile users dial internal extensions, transfer calls, put calls on hold or initiate a conference call — just as if they were in the office. All unanswered calls are routed back to corporate voice mail. MobileConneX comes in 8-, 12- and 24-port versions and costs about $250 per user. www.mck.com

- **Quintum Technologies** also announced its Tenor A200 voice/data router for remote and small offices. The box has four telephony ports — two public switched telephone network and two IP — and routes calls intelligently between a key telephone system or phone, the PSTN, and an IP network. It also handles two simultaneous voice-over-IP calls. Tenor A200 includes a four-port Ethernet switch and built-in router with a network address translation firewall and costs $699. www.quintum.com

- **Hewlett-Packard** and **Research in Motion** recently partnered to create software for printing e-mail and file attachments remotely over RIM's BlackBerry handheld devices. HP and RIM expect to launch the HP Mobile Enterprise Printing application some time next year. www.blackberry.net.; www.hp.com

- **Arescom** last week debuted a series of wireless residential gateways. The AresGate 1000 Pro and AresGate 1000 Wireless LAN Gateway connect to a DSL or cable, or 56K bit/sec modem and let computers be networked via 802.11b wireless. Pricing has not yet been set. www.arescom.com

The Reviews Are In

"One of the best seminars I have ever attended."

Quy Pham
Hall-Mercer Center of Pennsylvania Hospital

"Great collection of minds."

Jeffrey W. Kulp
Schlouch Incorporated

"Bravo — well done."

Roger Oberdier
IEC

"Professionally presented."

Raj Ray
NYC Transit

"Great seminar."

Richard Dennis
LoanPerformance

STATE OF THE LAN℠

Hundreds of professionals, such as yourself, took time out of their busy day to attend our recent Network World State of the LAN Town Meeting. They asked hard-hitting questions and got straightforward answers from respected LAN experts. They went head to head with sponsors and peers who were willing to share their ideas, insights, experiences, and visions for the LAN. They heard industry leaders from Avaya and Marconi provide the inside scoop on today's hottest LAN issues.

Now you can do what more than 5,000 satisfied LAN professionals have already done – attend our upcoming FREE Network World State of the LAN/MAN Town Meeting.

Register for our upcoming State of the LAN/MAN tour today!

About our sponsors:

AVAYA communication

Avaya is a leading provider of communications systems and software for enterprises, including businesses, government agencies and other organizations. We offer voice, converged voice and data, customer relationship management, messaging, multi-service networking and structured cabling products and services. Avaya is a worldwide leader in sales of messaging and structured cabling systems and a U.S. leader in sales of enterprise voice communications and call center systems. Avaya's broad customer base includes approximately 78% of the Fortune 500 companies. In fiscal 1999, we had revenue of approximately $8.3 billion and net income of approximately $300 million. www.avaya.com

Marconi.

Marconi, a recognized leader in intelligent broadband solutions for the Modern Enterprise and New Public Network, was pleased to participate in Network World's "State of the LAN." Marconi brings experience and leadership to discussions on broadband switching and routing of IP/MPLS, Ethernet, ATM and optical networks, application convergence, and IP Telephony. One of the fastest growing communications companies in the world, Marconi has 45,000+ employees delivering integrated business solutions to customers worldwide. www.marconi.com

Who attended?

IT Professionals from:

- Bristol-Myers Squibb
- Congoleum Corp.
- Costco Wholesale Corp.
- Deere & Company
- Fannie Mae
- Galileo Foods
- Honeywell International
- Prudential
- Sears, Roebuck & Co.
- Simon & Schuster
- Sunoco, Inc.
- SunTrust Bank
- U.S. Air Force

PRODUCED IN ASSOCIATION WITH:

THE TOLLY GROUP

Register at www.networkworld.com/seminars/lanman or call (800) 643-4668.

To sponsor this Network World event, please contact Andrea D'Amato at 508-490-6520 or adamato@nww.com

NetworkWorld
TOWN MEETING
Where technology leaders answer to **you.**

ServiceProviders

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS

Content delivery networks carry the heavy load

News sites credit Akamai, others with keeping sites available after Sept. 11 tragedy.

■ **BY JENNIFER MEARS**

Steve White, CTO at MSNBC.com, had been leading his team through stress tests, beating up on his Web site as it prepared to handle millions of viewers during the upcoming Winter Olympics. He was planning to add servers early next year and had already cranked up to two gigabits of bandwidth to handle huge loads.

But on Sept. 11, shortly after two hijacked planes crashed into the World Trade Center in New York, White faced stress on his site that was no test. He turned to content delivery network (CDN) provider Akamai to help handle the sudden, unprecedented load.

Akamai "was absolutely critical" to handling traffic that reached 12.7 million page views by the end of the day, more than four times the number of views on MSNBC.com on a typical day, White says. Its previous record audience was the day after last year's presidential election, when MSNBC.com recorded 6.5 million page views.

It's a scenario that played out across the Internet as news sites were inundated with viewers. Most sites, such as MSNBC.com, typically use CDNs to serve streaming video and other images, but on Sept. 11, MSNBC.com wasn't alone in finding CDNs could help make all sorts of Web site content, including basic text, more accessible to visitors.

Short Takes

■ **AT&T** and **WorldCom** have announced traffic prioritization enhancements for their managed IP frame relay services (see www.nwfusion.com, DocFinder: 6140). AT&T launched its IP Virtual Private Networks service, which offers users class-of-service support over their meshed frame relay networks. AT&T's IP VPN service is an extension of its IP Enabled Frame Relay offering.

Separately, WorldCom is offering its Private IP customers a new option called Premium Priority that allows them to divide traffic into three classes of services. WorldCom's Premium Priority enhancement is supported using Differentiated Service, an IETF specification that uses the type of service bit in the header of each IP packet to set traffic classes up to 64. AT&T's enhancement is based on IP Precedence, an older IETF standard that supports up to eight classes of service. Both technologies allow users to designate traffic such as voice as first class, SAP or other transaction-oriented traffic as second class and e-mail traffic as third class. AT&T: www.att.com; WorldCom: www.worldcom.com

CDN numbers speak volumes

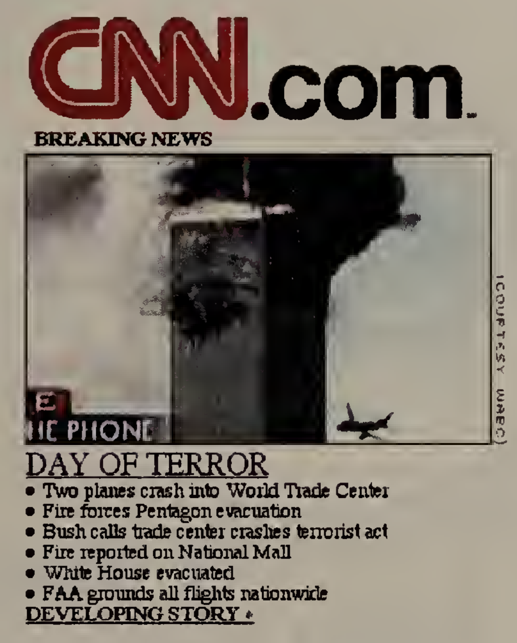
CDN providers such as Akamai, Speedera and Digital Island had been the darlings of the Internet boom, pushing content to their own networks of geographically dispersed caching servers on the edge of the Internet, bringing content closer to users and speeding content delivery. Akamai, for example, has nearly 12,000 servers in 62 countries.

While the fortunes of CDN providers have fallen with many of the dot-coms, it's not as if the providers haven't been signing up new customers. In fact, the number of companies using CDNs has doubled to 2,500 in the past year, says Peter Firstbrook, a senior research analyst at Meta Group.

The performance of CDNs on Sept. 11 may help that number grow. Akamai handled three times its normal load that day, as many of its news site customers increased their use of CDN services by pushing out more content, such as HTML pages, and new customers called to quickly add the service.

"There were so many corporations that were touched," says Paul Sagan, president of Akamai. "Unlike the news sites, they usually don't build their capacity for big spikes. It's a much more predictable kind of flow. They suddenly had great traffic, and we were able to help many of them very quickly."

Sagan wouldn't identify which corporations turned to Akamai, saying only that most were in the airline and rental car industry. Akamai's network proved its mettle that day, he says, the same day that company co-founder Danny Lewin died on American Airlines Flight 11.



CNN.com

BREAKING NEWS

(COURTESY WABC)

DAY OF TERROR
- Two planes crash into World Trade Center
- Fire forces Pentagon evacuation
- Bush calls trade center crashes terrorist act
- Fire reported on National Mall
- White House evacuated
- FAA grounds all flights nationwide

DEVELOPING STORY ›

Hours after the Sept. 11 terrorist attacks, CNN.com displayed a specially trimmed, breaking-news version of its usual site in an effort to manage the heavy traffic load.

To handle the increased demand, Akamai engineers distributed the authorized code needed to use the Akamai network to customers and balanced servers to ensure that there was enough capacity to handle content where demand was the greatest.

"That's what Danny [Lewin] was all about: Building the world's largest, most scalable network, and there's horrible irony in that fact that [Akamai] faced its biggest challenge and came through it in the same event that killed him," Sagan says.

Tricky transition

But news sites found that turning more traffic over to a CDN wasn't quite as easy as flipping a switch.

White and his engineers, for example, had to code HTML pages to be "Akamaized." In fact, MSNBC.com's team initially stripped down the site to highlight nothing but the top four or five news stories, but before long, White knew he had to turn to Akamai to handle more than the streaming video it usually serves for MSNBC.com.

"We had a rough patch early on in terms of the transition. When you have effectively five or six big, huge breaking stories coming every 15 minutes . . . I hesitate to say we should plan for that. But you know what? We should," he says. "We thought we would have some time to go through the process in a more paced manner."

White says the task will be to figure out how to transition things to the CDN more quickly. "How do we modify workflow and production process to ensure there is no downtime?" he says.

By midday, White says, Akamai was serving about 80% of MSNBC.com's traffic, which included about 12.5 million streams of video.

At CNN.com, Kenneth Craig, vice president of enterprise systems for CNN Internet Technologies, says he used Akamai to off-load images and other bandwidth-intensive content. All HTML was served from CNN servers in Atlanta, although CNN.com had to take servers from CNNfn.com and CNNsi.com to handle the load.

At Washingtonpost.com, there was a similar scenario. During an average day, the site runs about 20% to 30% of its content, primarily images and video, from Akamai servers. On Sept. 11, about half of the site's content had been pushed out, including text, which had not been pushed out to edge servers in the past. The site had intermittent outages for the first hour as it was slimmed and content was sent out to the CDN, says Eric Schvimmer, vice president of technology.

The same thing was true for ABCnews.com, which used Akamai, Digital Island and other CDNs to serve video and images but handled text at its data center in Seattle.

Doug Parrish, senior vice president and CTO for Walt Disney Internet Group, which owns ABCnews.com, says he tripled the number of Web servers to about 40, using systems from sites such as ESPN.com and ABC.com.

That, however, is where Akamai truly came in handy for sites that don't have such deep resources. "We would have had to have 10 times the capacity sitting idle for 364 days of the year. It's ridiculous," says MSNBC.com's White. "Akamai is a very elegant solution for not throwing money at hardware that you'd have to leave 90% of turned off most of the time." ■

EYE ON THE CARRIERS

Johna Till Johnson

When is a service provider not a carrier?

Here's an interesting conundrum. Bandwidth is increasingly becoming a commodity, yet the cost of provisioning, delivering and monitoring that bandwidth continues to rise.

According to Meta Group, up to half of service provider spending goes toward operations. So in some sense, one might argue that service providers don't really sell bandwidth. They sell bandwidth packaging (sort of like a cereal company selling 30 cents worth of cereal in a $2.50 box).

You might think, then, that providers would view their provisioning, activation and monitoring suites as competitive advantages, and the bandwidth as effectively a giveaway. You'd be wrong. Most providers that my firm works with view bandwidth as their primary offering, and the provisioning, activation and monitoring systems as an almost irrelevant add-on — even when it's far more expensive than the bandwidth. The few visionaries within these service provider organizations who understand that it's the other way around find themselves lonely voices in the crowd.

Why does it matter? Because an organization's structure, expenditures and focus derive from its business model. Specifically, companies in low-margin industries (retail, wholesaling) tend to require highly scalable, efficient and specialized infrastructures that let them wring pennies out of overhead costs — but that aren't highly flexible and adaptable. (I'll never forget the client who said $5 per month for frame relay "shadow PVC" backup circuits was out of her budget, given the 1,100 stores she had to support.) The emphasis in this kind of industry lies in reducing the total cost of ownership (TCO) — streamlining operations, even at the expense of functionality.

Higher-margin companies have much more leeway in the systems they deploy. It's no surprise that the most sophisticated IT departments are in the financial services, pharmaceuticals and entertainment industries, whose CIOs and top network executives view technology as a competitive differentiator. These companies focus on improving return on investment (ROI) — with the emphasis decidedly on the R.

Telephone companies that can't decide which camp they're in are in trouble, because they'll spend too much while delivering too little. This confusion lies at the root of most customers' unhappiness with their service providers today.

When will this change? When service providers begin recognizing their operations support systems and business support systems represent a competitive advantage. Carriers that have invested heavily in such systems — and built out solid, effective ones — ultimately will recognize that they can succeed even if the bandwidth they offer is commoditized, or even free. Some may choose to offer high-end services across bandwidth provided by other telcos (which focus on wholesale bandwidth delivery).

Ultimately, we'll see a dichotomy in the carrier world, with wholesalers delivering undifferentiated bandwidth and service providers provisioning, activating and monitoring services delivered across that bandwidth. My best guess is that it will take three to five years for this mindset to begin to take hold.

Johnson is senior vice president and CTO for Greenwich Technology Partners, a leading network consulting and engineering firm. She can be reached at johna@greenwichtech.com.

FireProof - the security center of your network; providing 24x7 scalable protection

FireProof intelligently load balances and directs IP traffic to security devices such as firewalls, VPNs and IDS systems. It eliminates bottlenecks and single points of failure, ensuring that security systems are always available and optimized. FireProof allows for manageable and cost effective growth, laying the foundation for a scalable security infrastructure. FireProof allows for different levels of service for users and applications, while protecting firewalls and servers. Choose FireProof for intelligent security traffic management.

US toll free: 1-888-234-5763 | www.radware.com | info@radware.com

radware get certain

The Edge

■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Qwest tries out free-space optics service

■ BY TIM GREENE

DENVER — Qwest Communications is using free-space optical gear to supplement its point-to-point broadband service offerings, bringing corporate users high-speed connections that previously were impractical.

The FSO gear will be used in customer networks where traditional options such as optical fiber are unavailable or would take too long to install, Qwest says. Gaining permits and rights of way to run fiber can take months, whereas free-space lasers can be set up rapidly, mounted on rooftops or inside windows.

Broadband wireless had been considered the front-runner to address fiber unavailability, but licensing and funding problems with wireless carriers slowed this market. In the meantime, the price of FSO gear has dropped dramatically, making it more attractive.

An OC-3 free-space link that cost $25,000 to $30,000 two years ago now costs $8,000 per link, says John Griffin, CEO of LightPointe, which makes the FSO gear Qwest has approved for its network.

FSO beams traffic between buildings at distances from 500 to 2,000 meters, depending on atmospheric conditions. Potential limitations of FSO are its susceptibility to fog and other obstructions that can block or diffuse the laser.

The speed of available LightPointe equipment reaches 1.25G bit/sec. LightPointe says the company has demonstrated links twice that fast.

Qwest says it will use the equipment at speeds of 155M bit/sec and above.

Qwest is building fiber networks in 25 cities outside its home states where it is the predominant local exchange carrier. The provider says FSO is being used in at least one corporate user's network supported by Qwest, but it would not identify the customer.

FSO will be used in cases where, for instance, a highway separates two buildings in a corporate user's network and it would take too long to install a fiber cable. Instead, FSO transmitters and receivers would be set up on each building.

Qwest is the best-known service provider to use FSO, which faces a critical period in service provider adoption, says Dave Dunphy, a Current Analysis analyst.

Lasers have been beaming traffic between buildings in service provider networks for about 16 years, but just recently has demand for bandwidth made providers consider it seriously as a broadband alternative to fiber, Dunphy says.

Qwest's acceptance of FSO, however, doesn't ensure that the technology will be widely used, he adds.

"You can make it onto a carrier's approved-vendor list and never sell anything. It all depends on what the actual needs are," he says.

Dunphy says many carriers are trialing FSO, but none, including Qwest, has announced a contract that commits it to buying large quantities. The technology has been used for years by companies setting up networks among campus buildings but is just being considered seriously by service providers.

Providers are also weighing passive optical networking as an alternative to give optical-speed access to carrier services, according to market research firm IDC. ■

Free-space optics pros and cons

Here are some attributes of free-space optics, a technology that beams data on lasers from rooftop transmitters to rooftop receivers.

Pros

- 2.5G bit/sec speeds (in labs).
- No license needed, unlike wireless.
- No cabling needed.

Cons

- Limited range up to 6.2 miles under perfect conditions.
- Line-of-sight path required.
- Limited track record within carrier networks.

Short Takes

■ Storage service provider **Storability** this week will announce new software that lets other service provider customers manage and pay for storage as if it were a utility.

The AssuredStorage Management System (ASMS) includes the measurement, management and operation of heterogeneous storage resources and is deployed within the corporate firewall. It collects statistics on day-to-day operations and includes reporting and knowledge-base information. ASMS is available now starting at $250,000. **www.storability.com**

■ **Marconi** is announcing today that service provider Iris Networks will use Marconi dense wavelength division multiplexing technology (DWDM) in its 1,200-mile network in Alabama and Tennessee. This is the first sale of Marconi DWDM gear in North America, the firm says. Iris plans to use OC-48 lasers to create separate optical channels on one fiber, supporting voice, video and data services. The DWDM traffic will travel the same fiber as Iris' current SONET network without disrupting the SONET traffic. Iris is a consortium of 11 independent phone companies. **www.marconi.com**

Narus polices prepaid wireless nets

■ BY JIM DUFFY

PALO ALTO — Billing and mediation software developer Narus last week announced its next-generation offering, which enforces service provisioning policies based on collected usage data.

The software, which Narus has not yet named, is designed to let service providers profitably deliver next-generation services while controlling the associated risk through policy enforcement.

For example, if a prepaid mobile service subscriber has a zero credit balance, the Narus software can downgrade or eliminate service in real time based on policies predefined and programmed by a network operator.

Indeed, the first application for the new software platform is called the Narus Solution for Prepaid Wireless Mobile Internet Services. The software collects and analyzes usage data and then denies or permits services in any combination, including e-mail, browsing, voice over IP and streaming media, based on specific policies pertaining to usage or billing.

Although the initial application for the new Narus platform is in prepaid mobile, it can also work with other service provisioning applications, Narus says.

The software platform includes two key components: Policy Manager and Interactive Semantic Traffic Analyzer (ISTA).

Policy Manager passes balance and other information back and forth from the billing and customer care application, decrementing the subscriber's balance and generating action by third-party notification and messaging applications. ISTA collects data and receives policy-based action requests from Policy Manager and enforces those policies using Narus' patent-pending IP Signaling technology, which sends appropriate disconnect or other commands to client and server.

Analysts believe software like Narus' could become the norm in service/billing mediation. "Mediation is going to become a much more flexible and powerful tool," says Mike Allen, an analyst at Aberdeen Group.

"Up to this point, it's been a standard product with few bells and whistles — it had to be tweaked by the IT staff or the vendor," he adds.

"We're now in the stage where mediation vendors are starting to take all of this network usage information and develop their own applications to sit on top of it, and do new and cool things," says Jason Briggs, an analyst at The Yankee Group.

Challenges for Narus include the slow sales cycle into incumbent local exchange carriers, and the infancy and unpredictability of the prepaid IP wireless market.

The new Narus software will be available in the fourth quarter. Pricing is customer/-network-specific.

Narus: www.narus.com

www.nwfusion.com

More online!

More news on billing software.

DocFinder: 6138

intel inside
XEON

MACROPR

It's the power of Intel®-based servers. It's thousands of components from hundreds of suppliers, coming together at the right place at the right time. It's being able to scale fast to serve multiple customers, suppliers and partners around the world. It's massive server performance without massive hardware costs. To find out how to optimize your supply chain, visit intel.com/ebusiness.

intel®

©2001 Intel Corporation. Intel and Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. All rights reserved.

OCESSING

IS MANUFACTURING ON A GRAND SCALE.

Put an end to lost data with the MaxAttach™ NAS 4300 file server from Maxtor. Only the MaxAttach 4300 with Persistent Storage Manager (PSM) attaches to your network via Ethernet and automatically takes snapshots of your file system as often as you tell it to. Making data recovery easier than ever. And like all of our NAS 4000 Series products, it provides disk storage for the cost of tape. So while profanity won't bring your data back, the new MaxAttach 4300 will. Compare the MaxAttach 4000 Series to other storage solutions with the MaxAttach Storage Calculator at **www.maxtor.com/ma320** or call **1-800-240-9201**.

MaxAttach NAS 4300 File Server

- 400GB capacity
- PSM snapshot capability
- Gigabit & 10/100 Ethernet
- $5,999 MSRP

[illegible] All rights reserved. Maxtor is a registered trademark and MaxAttach is a trademark of Maxtor Corporation. All other trademarks are the property of their respective owners.

Technology Update

AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

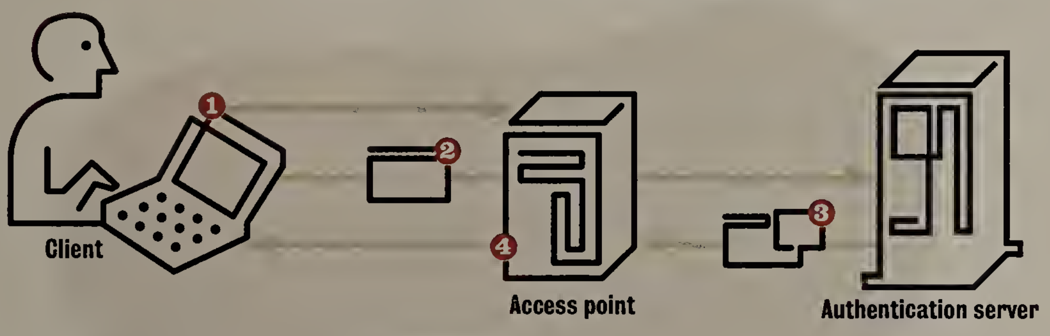
802.1X authenticates 802.11 wireless

IEEE standard is based on Extensible Authentication Protocol.

BY PEJMAN ROSHAN

802.1X Authentication

HOW IT WORKS **802.1X authentication for wireless LANs provides centralized, server-based authentication of end users.**



❶ A client sends a "start" message to an access point, which requests the identity of the client.

❷ The client replies with a response packet containing an identity, and the access point forwards the packet to an authentication server.

❸ The authentication server sends an "accept" packet to the access point.

❹ The access point places the client port in authorized state, and traffic is allowed to proceed.

Wireless provides convenience and mobility, but it also poses security challenges for network executives and security administrators.

Security for 802.11 networks can be broken down into three components: the authentication mechanism or framework, the authentication algorithm and data frame encryption. This story will focus on the authentication mechanism or framework.

Current authentication in the 802.11 standard is focused more on wireless LAN connectivity than on verifying user or station identity. For enterprise wireless security to scale to hundreds or thousands of users, the current method of authentication must be replaced by an authentication framework that supports centralized user authentication.

Task Group 1 of the IEEE 802.11 committee is working on 802.1X, an IEEE standard that provides an authentication framework for 802-based LANs. 802.1X will let wireless LANs scale by allowing centralized authentication of wireless users or stations. The standard is flexible enough to allow multiple authentication algorithms, and because it is an open standard, multiple vendors can innovate and offer enhancements.

It is important to note that 802.1X alone lacks the components that 802.11-based LANs need for user-based authentication. Task Group 1 is drafting amendments to the 802.11 specifications to incorporate 802.1X services.

802.1X takes advantage of an existing authentication protocol known as the Extensible Authentication Protocol (EAP [RFC 2284]). 802.1X takes EAP, which is written around PPP, and ties it to the physical medium, be it Ethernet, Token Ring or wireless LAN. EAP messages are encapsulated in 802.1X messages and referred to as EAPOL, or EAP over LAN.

802.1X authentication for wireless LANs has three main components: The supplicant (usually the client software); the authenticator (usually the access point); and the authentication server (usually a Remote Authentication Dial-In User Service server, although RADIUS is not specifically required by 802.1X).

The client tries to connect to the access point. The access point detects the client and enables the client's port. It forces the port into an unauthorized state, so only 802.1X traffic is forwarded. Traffic such as Dynamic Host Configuration Protocol, HTTP, FTP, Simple Mail Transfer Protocol and Post Office Protocol 3 is blocked. The client then sends an EAP-start message.

The access point will then reply with an EAP-request identity message to obtain the client's identity. The client's EAP-response packet containing the client's identity is forwarded to the authentication server.

The authentication server is configured to authenticate clients with a specific authentication algorithm. The result is an accept or reject packet from the authentication server to the access point.

Upon receiving the accept packet, the access point will transition the client's port to an authorized state, and traffic will be forwarded.

802.1X for wireless LANs makes no mention of key distribution or management. This is left for vendor implementation.

At logoff, the client will send an EAP-logoff message. This will force the access point to transition the client port to an unauthorized state.

802.1X for 802.11 networks has the potential to simplify security management for large wireless deployments. It is important to remember that it is not the only piece of the security puzzle for 802.11 networks. Coupled with an authentication algorithm and data frame encryption, network administrators can provide scalable, manageable and mobile network services.

Roshan is technical marketing engineer at Cisco. He can be reached at proshan@cisco.com.

Got great ideas?

Network World is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Features Editor Neal Weinberg (nweinberg@nww.com).

Ask Dr. Internet

By Steve Blass

Where can I start for tutorials and reference information on implementing network disaster recovery and business continuity planning?

A good place to start gathering information is www3.gartner.com/5_ about/news/disaster _recovery.html, where Gartner is offering open access to disaster recovery planning research. Additional resources can be found through the Disaster Recovery Institute's useful links page located at www.dr.org/uselink.htm. To get started, review your documentation and have all of the information you need to reproduce your network, system and application configurations. Maintain restorable current off-site backups of the data you would need to restore application services. An online example of one impact assessment model is available at www.so.cc.va.us/its/models/index.htm. The ACM Risks forum can be a useful source of risk-analysis information. A standard business recovery criteria checklist is available at www.fema. gov/ofm/brecov.htm. An alphabetical listing of Federal Emergency Management Agency documents is at www.fema .gov/fema.

Blass is a network architect at Change@ Work in Houston. He can be reached at dr. internet@changeatwork.com.

GEARHEAD
INSIDE THE
NETWORK
MACHINE
Mark
Gibbs

Curing Web insanity

There is little doubt that the Web has gone insane. Where once you could meander happily around the 'Net loading pages, you now find pages opening over the page you wanted (pop-ups), under the page you wanted (pop-unders) or opening when you leave the page (more pop-ups). There are also pages that force a refresh, pages with nosy JavaScript, pages with acres of blinking text and countless other pages that just generally tick you off.

So you have two choices — fix the problem or stop using the Web.

The latter being impractical, we'll go for fixing the problem and the solution is a utility — and a free utility at that! — called Proxomitron, the creation of Scott Lemmon. You can find this fantastic tool (do you think we're a little excited?) at the wonderfully named http://spywaresucks.org/prox/.

Proxomitron is a simple idea: It's a proxy server that can parse Web pages and match patterns in the text of the retrieved HTML code to look for code that will do something you don't like.

Here's how it works: When a Web browser requests a URL from the proxy (which runs on your PC or any machine you please), the proxy retrieves the URL contents and attempts to match the text in the contents with rules defined in Proxomitron.

When a pattern match is found (say for a pop-under ad) Proxomitron changes the code into a comment that doesn't get displayed by the browser. Optionally, new code can be added based on the original code.

Before we get into how the tool is configured and how it works with your browser, we should first cover how it matches text patterns.

The tool has its own text-matching language that is a lot like regular expressions (see www.nwfusion.com, DocFinder: 6139) but with some additional wrinkles. The rules are in several parts, the most important of which are the matching expression and the replacement text. For example, if the matching expression is:

```
\1 <body> \2 </body> \3
```

And the replacement text is:

```
\1 <body><b>All gone!</b></body> \3
```

Then the page contents as defined between the body tags would be replaced with "All gone!" in bold text. The specifications "\1" etc. are variables that store the text that follows the start of the input text or the last matched text to the next matched string.

> **You have two choices — fix the problem or stop using the Web. . . . We'll go for fixing the problem.**

Thus, if in our last example the requested Web page read:

```
<html>
<head><title>My page</title></head>
<body>Howdy!</body>
</html>
```

The output will be:

```
<html>
<head><title>My page</title></head>
<body><b>All gone!</b></body>
</html>
```

The \1 variable held the text "<html> <head><title>My page</title></head>", the \2 held "<body>Howdy!</body>", and so on. Actually, this is a very primitive rule because the <body> tag could contain an attribute such as <bodybackground= "mybg.gif">, which would cause the rule to fail. We can solve that by doing this:

```
\1 <body (*|)> \2 </body> \3
```

Here the string "(*|)" in the matching expression means that any sequence of characters (that's the "*") or (that's what the "|" character means) no characters can precede the closing ">". You can't use "*" by itself to match any character because the rule will fail — obviously not what we want.

So consider a page that contains the dreaded blinking HTML text (to be distinguished from animated GIFs and DHTML tricks that do the same thing). Under Proxomitron, the following rule will find both the opening and closing blink tags (note that a rule will be applied repeatedly to the incoming text):

```
<\1blink>
```

Proxomitron's Replacement Text would be:

```
<\1b>
```

Thus, "<blink>Isn't this annoying?</blink>" would become "Isn't this annoying?".

Next week, we'll delve further into the depths of Proxomitron. Match your text at gearhead@gibbs.com.

Cool Tools
Quick takes on high tech toys
KEITH SHAW
Lord of the Things

Your cell phone can never be too thin

Back in the olden days (circa 1991), cell phones were big, chunky bricks. Like all technology, advances generally result in smaller devices. A few years ago, I saw a version of a cell phone wristwatch.

Then wireless Internet features were added to the phones, and suddenly you needed to be able to have a readable screen and larger battery. I assumed we would see a growth in the size of the phones to accommodate a larger screen size and battery power.

I was right — and wrong. Smart phones such as the Kyocera Smart Phone (and soon-to-be-released Samsung I300) have gotten bigger than your average Nokia or Ericsson model.

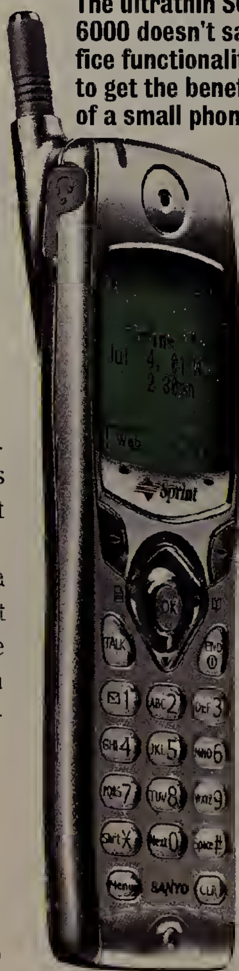
But then I received a Sanyo SCP-6000 with Sprint PCS wireless Web service, and was floored. The phone is only 1 1/2 inches wide, 5 inches long, and less than a 1/2 inch thick. In terms of thickness, it's about the same as a Hershey bar, with about half the width. The size and weight means it can easily fit into a shirt or pants pocket without feeling like you're carrying a sack of marbles.

Yet the designers haven't sacrificed on screen real estate to get the phone so small. On a news story, you get about six lines of readable text (although the font size is a bit bigger, which means you have to scroll down more often). And the phone's screen is also a "four-step gradation display," which means you can view images in addition to just text. Granted, with only four gradations the pictures aren't that great, but it's still a nice feature.

In addition, the phone has a green or orange backlight that greatly improves readability. The green was much brighter than the orange, giving it an otherworldly glow whenever I used it in darker rooms.

The buttons on the phone are in a relatively logical place, although placing the "menu" and "clear" buttons at the bottom was a bit awkward, as they are so far away from the other navigation buttons.

I liked how the arrow buttons surrounded the "OK" button, which made scrolling around the Web screens much easier than other phones I've tried.



The ultrathin SCP-6000 doesn't sacrifice functionality to get the benefits of a small phone.

And while normally I'm not impressed with style features on cell phones, the silver metallic case (Sprint PCS calls it a "strong magnesium alloy") gave it an executive look and feel.

Like some other phones, the SCP-6000 gives you a choice of many ringtones, and half the fun is trying them all out in front of your co-workers. Sprint PCS also sells a separate software kit that lets you download additional ringtones. That kit was back-ordered, so unfortunately I didn't get to try it out for this column. Another downside was the lack of predictive text input on this phone. Several other phones and carriers are implementing this feature, which was not apparent on this model.

There are a ton of other features on the phone and the Sprint PCS service, including a headset jack for hands-free operation, voice-activated dialing, a phone book, calendar and memo recorder. According to Sprint PCS, the standard lithium ion battery provides up to two and a quarter hours of continuous talk time or up to 160 hours of continuous standby time. The phone came with a travel charger (as opposed to a cradle) that connected easily to the phone for recharging.

If you're lucky enough to find one, you can buy the SCP-6000 for about $300 (plus monthly service) at a Sprint retail store, or on the Web at www.sprintpcs.com.

Shaw is the senior reviews editor at Network World. *Send news of cool new stuff to kshaw@nww.com.*

Cool-O-Meter

Sanyo SCP-6000

Cost: $300, plus monthly service plan

Carrier: Sprint PCS

Pros: Extremely thin and ultraportable; great backlight; screen size gradation adds image capabilities.

Cons: Text input still difficult.

Coolness score: 7

1 = Lame; 10 = Sweet

Tito Ade-Adisa, Senior Systems Engineer, **Honda Research and Development**

"I need the first look at **new technologies.**"

System engineers like **Tito** attend the **High-Velocity Computing Conference** at COMDEX to get up to speed on high-impact technologies. You'll get the insight, information and competitive edge you need at **COMDEX** Fall 2001.

Register now
www.comdex.com/fall

Please use priority code: ADNW

Real people. Real faces.
Tito Ade-Adisa responded to the "Faces of COMDEX" call for entries. We appreciate her permission to use her self-portrait and statement.

COMDEX is the IT marketplace where buyers and sellers meet, learn and make technology decisions.

OFFICIAL CORPORATE SPONSORS OF KEY3MEDIA GROUP

Mercedes Benz
Official Automotive Sponsor

NYSE
New York Stock Exchange

Key3 Media Group PRESENTS COMDEX FALL 2001

Las Vegas, Nevada
COMDEX Educational Programs: November 10–15, 2001
COMDEX Exhibition: November 12–16, 2001

Copyright © 2001 Key3Media Events, Inc., 300 First Avenue, Needham, MA 02494-2722.
All Rights Reserved. C001-9525 8/01 Key3Media, COMDEX, and associated design marks and logos are trademarks owned or used under license by Key3Media Events, Inc., and may be registered in the United States and other countries.
Other names mentioned may be trademarks of their respective owners.

EDITORIAL

John Dix

Have your cell phone call my PDA

One of the meetings I was able to squeeze in at NetWorld+Interop 2001 in Atlanta before being dispatched home when news of the disaster filtered in was with a small company out to solve a thorny problem: peer-to-peer links between myriad gizmos.

It's hard enough to figure out how to get your laptop to communicate with your PDA and cell phone, but just try to get your PDA to talk to mine. And it's only going to get worse as portable devices proliferate, and intelligence is built into everything from cars to vending machines. (Remember the idea about being able to buy a Coke by dialing the machine from your cell phone? Wouldn't it be easier just to point and click?)

The nub of the problem is there are too many options. Even if you have two devices with infrared, 802.11b wireless Ethernet or Bluetooth ports, that doesn't guarantee they can communicate. There are application, operating system and protocol implementation hurdles to overcome.

For example, cell phone makers may not implement Bluetooth 1.1 in the same way, or the version on my machine may be different from the one on yours. And if we swap electronic business cards and my application supports three address lines and yours only supports two, what happens to the third line?

Enter Impart Technology. The company has developed something called the Embedded Communication Broker (ECB) to support just in time application assembly.

In use, a device with the 220K-byte ECB can determine through an initial conversation what another device looks like and then build a state machine on the fly to accommodate that device's idiosyncrasies. When communications are complete the state machine is discarded.

Unlike competing approaches, Impart's technology doesn't require software on both devices, so its reach will be greater out of the box, and it doesn't require communications through a translating service or server, so it's simpler.

CEO Scott Bleakley says the system will also be dynamically extensible. If the device with the ECB doesn't have the required components to open a dialogue with another device, and happens to have access to the 'Net, it can dial up Impart and download the appropriate state machine.

Bleakley plans to make money by OEMing the technology to vendors of cell phones, PDAs and other devices — discussions already in the works — and selling $2,000 software development kits and collecting run-time fees.

It isn't clear if the company will make it, but the need for this product can only grow with time.

— John Dix
Editor in chief
jdix@nww.com

opinions!

No IT shortage

Regarding "It's raining resumes" (www.nwfusion.com, DocFinder: 6031):

IT is not a profession one should seek out at this time, due to the fact that there are so many people out of work, especially here in California. Even if you have 10 years of experience, the chances of getting a job interview are pretty slim. Several recruiters have told me that they themselves are on hard times because companies are not willing to pay the exorbitant fees to find workers. And if you do find a job, salaries have been driven down due to the overwhelming supply of candidates.

I work for a large semiconductor company that has been laying off people since last June. When I first started working here I had a staff of 20. I now have a staff of four, and the company is still in layoff mode. I have applied to several companies looking for work as an IT manager and senior systems engineer. One company told me it had received more than 475 resumes for one position. So you must ask yourself the question, where is the shortage of IT workers?

There is none; we now have so many people looking for work in IT that the supply now outweighs the demand.

Ken Garcia
Whittier, Calif.

Judging candidates

In "How to get the pick of the litter" (www.nwfusion.com, DocFinder: 6032), Gerry Bonnar contends that when a job candidate has had multiple positions in a short period of time, "That says to me that they weren't able to perform as expected."

I am a 10-year professional with three jobs listed on my resume where I was under contract for a short time. The reason behind my staying on contract for a short time was not based on my performance; it was based on numerous issues my clients had at that time, such as reduced departmental budgets.

Candidates should not be judged on their short-term work history or certifications, but on their overall scope of experience and what they as individuals would be bringing to the table.

Christian Ruiz
Chicago

Bad prediction

Regarding "PeopleSoft pack predicts customer penchants" (www.nwfusion.com, DocFinder: 6033):

PeopleSoft and the other vendors are missing the boat. They are pushing something that will never work.

Having software evaluate and predict how and what a customer will or will not buy is absurd. What they seem to be forgetting is the human factor. My experience has been that this type of software will place a customer in a particular category based on past purchases rather than other critical issues.

For example, I have purchased women's items for my fiancee, so the Web site thinks I am a woman. The customer service department either doesn't have the ability to modify the way the software works or just doesn't care. Either way, when you are dependent on the software without having some oversight capability, you have a system that irritates the customer.

Al Walker
Senior consultant
BPAS Consulting
Spokane, Wash.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 6136**

THE TECHNO-WIZARD UNLEASHES A DIABOLICAL VIRUS INTO CYBERSPACE. SUPREMELY CONFIDENT THAT MERE MORTALS ARE NO MATCH FOR HIS GENIUS!
SWEET!
AHEM.
DINK
Mike Keefe 2001

AFTERMATH

Salvatore Salamone

Time for videoconferencing

The terrorist attacks of Sept. 11 are likely to force many companies to rethink how they bring people together to work. Many people I know who travel frequently for business tell me their children are freaked out. Several friends have said their kids have asked them to promise never to get on a plane again. In a climate such as this, companies need to reevaluate the use of videoconferencing as a collaboration tool.

For more than a dozen years, videoconferencing has been touted for its ability to save money by reducing travel. Yet for the most part, even with a compelling return on investment, videoconferencing has been ignored by most companies — and for good reason.

If you are like most network executives who looked at videoconferencing in the past, you were probably greatly underwhelmed. Videoconferencing systems were expensive, difficult to set up and use, and required expensive dedicated lines or switched circuits.

The market for all videoconferencing equipment, including gateways, gatekeepers and multipoint control units, is about $156 million for this year, according to Wainhouse Research. Contrast that with the router and packet telephony gateway markets, which had revenues of $3.5 billion and $243.2 million, respectively, for the second quarter of this year alone, according to Cahners In-Stat.

But even before the terrorist attacks, there was optimism for renewed interest in the videoconferencing market. A study Wainhouse released earlier this year predicted videoconferencing products would grow 21.9% annually in the next four years.

Basically, there is a major shift occurring in the videoconferencing market, from hardware to software coder/decoders and from ISDN to IP, while the price of systems is dropping. For example, while most higher-end videoconferencing systems still predominately use ISDN for transmissions, many now also support IP connections. The newest generation of desktop videoconferencing systems are also easier to use and install, and almost exclusively use IP for communications. All these trends should help eliminate barriers to using videoconferencing.

But what about security? After all, if you are planning to use videoconferencing to conduct business, security is obviously an issue that must be addressed.

Security is available. In the hours after the World Trade Center and the Pentagon were attacked, President Bush, in a secure location, used videoconferencing to conduct meetings over the phone with Vice President Dick Cheney and National Security Adviser Condoleezza Rice at the Situation Room in the White House. So there are ways to ensure the privacy and confidentiality of corporate videoconferences.

Specifically, encryption is frequently used with ISDN-based videoconferencing systems. IP- and Web-based videoconferencing communications can be secured using straight encryption technology. And in some cases today, companies use the inherent security of a VPN to prevent eavesdropping on videoconferencing sessions.

While I don't believe business travel will grind to a halt, I do think many business travelers will insist that their travel be reduced. Network managers who can deliver and support cost-effective videoconferencing systems could be doing their companies and employees a great service.

Salamone is a networking industry writer and consultant in New York. He can be reached at s.salamone@att.net.

Even before the terrorist attacks, there was optimism for renewed interest in the videoconferencing market.

TELECOM CATALYST

Daniel Briere

The 'brighter' side of war

Call us the old fogies. We're the ones who say, "Remember back in 1986?" Or 1993? Or, in this case, 1991?

In the telecom world, 1991 was the year everything jumped up a notch. Why? Because of the Gulf War.

Now unless you were in the reserves or a member of the armed forces, 1991 was probably the year when you finally found a great morning activity — getting out of bed and riding your exercise bike or walking on your treadmill while watching the war on television. But for the telecom industry, the experience was truly transforming. The State Department issued travel warnings. Overnight packages were delayed due to security pressures. No one really wanted to get on a plane, domestic or international.

Recall that in 1991, e-mail systems were very disparate and not well interconnected. E-mail addresses still had numbers in them — and not ones you could choose. Videoconferencing use stagnated in the ISDN morass. Conference calling was kludgey. So most people didn't use these technologies much — at least, not at the level of business-class use that we have today.

But there is something about not getting on an airplane that will change your mind about things fast. And there's something about surging usage that gives service providers and equipment manufacturers incentive to solve customer problems.

The Gulf War caused people to do things differently because they truly wanted to. This was personal, a matter of safety and security.

E-mail and fax usage soared. Videoconferencing services and equipment sales increased. New trials of frame relay and other data transmission-based video were announced. Anything that would help increase communications without a physical presence was the topic of the day.

And what is critical is that usage levels did not return to prewar levels after the cessation of hostilities. Why? Because habits were changed for good. People got used to sending e-mail attachments. They became familiar with videoconferencing and found it not so scary after all.

Fast forward to 2001. Today, many technologies are languishing because of lack of widespread acceptance. In this slow market, there are not many signs that the hockey-stick spike toward standard business practice will occur anytime soon.

Webconferencing, Webcasting, voice over IP, next-generation VPNs. The list goes on. We hear a lot about these technologies and growth is occurring, just not at a stark pace where every business in the U.S. is using them radically and regularly. Until now.

The emotion and constraints imposed by the recent terrorist events are going to take us through another era of transformation. As sad as it is, these terrorist attacks are going to revive the telecom industry sooner and faster than anyone imagined.

Expect Webconferencing to become a standard feature of most businesses within the next two years. Webcasting is going to become popular for training, press conferences and earnings announcements. Phone calls are going to be more popular. This means more voice mails, more conference calls, even more interactive voice response and automated call distributor installations. Every mature family member will have a cell phone. Having to drive more places will mean more added features such as voice-activated dialing, car-based connectivity and remote-access technologies.

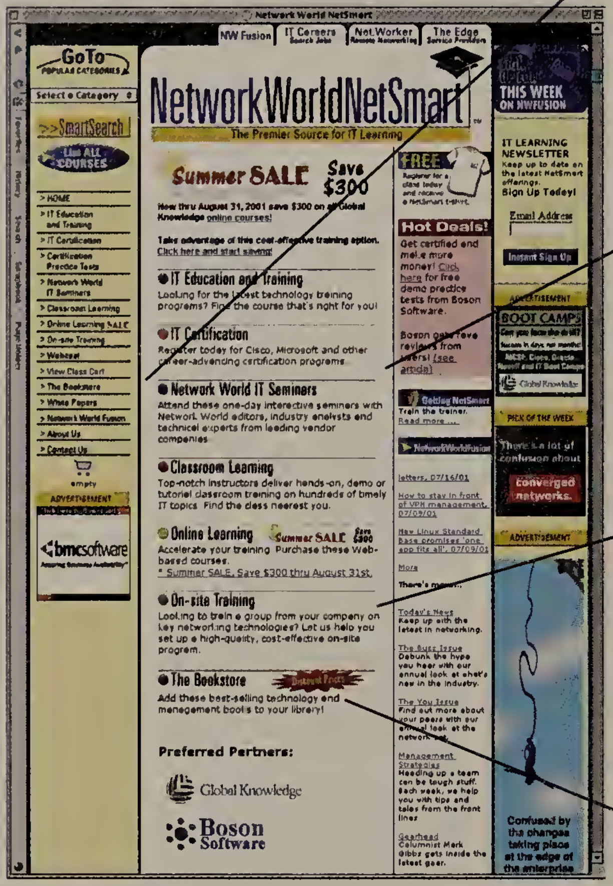
It all builds on itself, and as in 1991, the key thing is not just this momentary spike in traffic. These technologies are going to be founded deep in new emotional roots — new habits — that are going to permanently change the way we conduct business.

For a telecom industry that has seen its own share of battlefields in the past 18 months, these changes will serve to create some positive news for a lot of people.

Briere is CEO of TeleChoice, a market-strategy consultancy for the telecommunications industry. He can be reached at dbriere@telechoice.com.

The emotion and constraints imposed by the recent terrorist events are going to take us through another era of transformation.

Where do you find the best IT learning options?



● **Network World IT Seminars**

Check out the interactive events Network World offers.

● **IT Certification**

Register today for Cisco, Microsoft, and other career-advancing, certification programs.

● **On-site Training**

Save money and train your team with cost-effective, on-site training!

● **The Bookstore**

Purchase best selling technology and management books here!

NetSmart, the premier source for IT learning, offers everything you need to develop skills, build knowledge and advance your career. And now, NetSmart features even more career-building tools. Keep your skills up-to-date with certification practice tests, on-site training and online courses to keep you and your staff current on the latest network and IT technologies.

NetworkWorld NetSmart SM

The Premier Source for IT Learning

Sign up for the free "IT Education and Training" newsletter to get e-mail updates on upcoming events, courses, seminars and more.

www.nwnetsmart.com

Cisco Press

Win OFFICIAL Cisco® Certification Training Classes and More!

NetworkWorld NetSmart SM The Premier Source for IT Learning

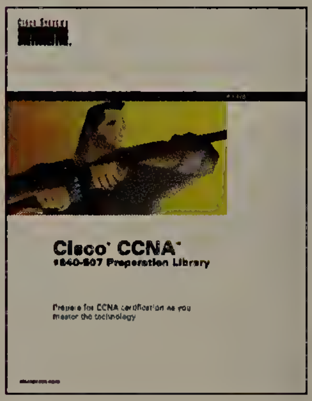
NetSmart Announces

WIN a Get Certified Prize Package—
a $2500 Value

Register to win a Get Certified Prize Package from the leaders in Cisco learning and certification. Not one, but **five** winners will win a package valued at more than **$2500**, including a FREE Cisco Training course from an authorized Cisco Learning Partner, a FREE Cisco vLab interactive networking lab from Mentor Technologies, a FREE Cisco exam from VUE Testing Centers, and a FREE 6-book library from Cisco Press.

Hurry! Registration ends October 15, 2001!
Go to www.ciscopress.com/getcertified

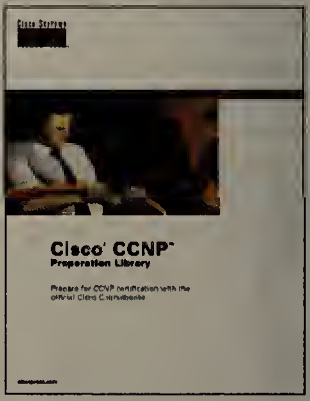
Buy these today at the NetSmart bookstore, www.nwnetsmart.com



Cisco® CCNA™
#640-607 Preparation Library

Prepare for CCNA certification as you master the technology

1-58705-038-2
3-Book Bundle



Cisco® CCNP™
Preparation Library

Prepare for CCNP certification with the official Cisco Coursebooks

1-58705-004-8
4-Book Bundle

Get Prepared the Official Way.
Get Cisco Certified.

Sponsored by:

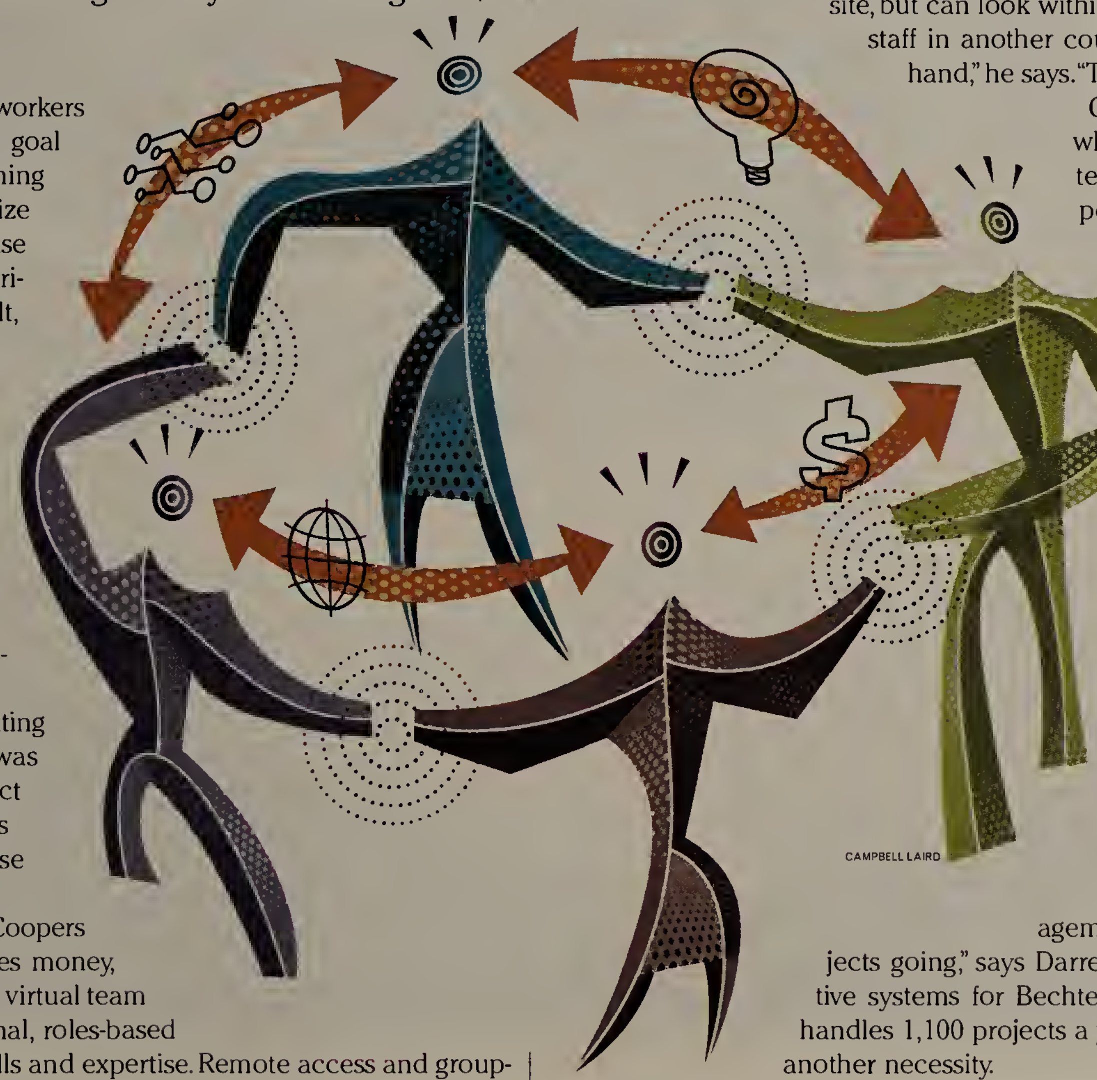
Cisco Systems Learning Partner NetworkWorld NetSmart vlab VUE

Virtual teams, real benefits

Organizing IT into virtual teams extends capabilities and saves money.

■ BY SUZANNE GASPAR

For years, lottery equipment manufacturer GTECH allowed its business units free reign in choosing technologies, which led the IT department on a merry-go-round of support for multiple platforms. The company's move to organize its IT department in virtual teams has paid off in eased manageability and savings of $3 million per year.


CAMPBELL LAIRD

A virtual team is a group of dispersed workers with distinct skills who focus on a specific goal on a temporary or ongoing basis. Transitioning to virtual teams forced GTECH to standardize platforms, build an IT skills inventory database and develop an evaluation process for prioritizing and assigning projects. As a result, GTECH went from buying six models each from 14 PC manufacturers to just five models from one manufacturer. The volume purchasing deal resulted in a 35% price reduction per desktop.

Another payoff is that IT more carefully chooses which projects to support. Senior network executives and business executives review technology requests based on how well the projects meet business objectives.

"Previously, having $100,000 in the accounting department budget for a new system was enough to initiate the project. But the project may not have been the most important," says Thomas Caffrey, vice president of enterprise systems for GTECH in East Greenwich, R.I.

Like GTECH, Bechtel and PricewaterhouseCoopers have found that forming virtual teams saves money, extends resources and boosts productivity. A virtual team goes beyond the boundaries of a traditional, roles-based department to tap members with varied skills and expertise. Remote access and groupware technologies let IT collaborate regardless of location and perform routine maintenance, troubleshoot network problems and roll out new projects.

Construction engineering giant Bechtel decreased its server management costs with a virtual team that functions as a distributed resource for server management. System administrators assigned to several offices now have access rights to the entire server infrastructure to collectively support 28,000 users on a global network.

Organizational advice

Executives say these are the steps for creating a virtual team:

- Prioritize business problems that you can solve with technology.
- Choose a team leader and identify required staff skills.
- Determine objectives and time frames.
- Review and test results.

And PricewaterhouseCoopers' move to virtual teams extended its IT resources, letting staff perform virtually any router or switch maintenance task remotely. Staffers, located in 150 countries, use standardized platforms to remotely enable backups, perform operating system upgrades and set up phone extensions for employees.

Ivens Mendonca, director of integration services for PricewaterhouseCoopers in Atlanta, says virtual teams can react quickly in a crisis. With the Code Red virus, IT pulled an international team together to share techniques for accessing switches and blocking traffic from affected servers, buying time for staff to commute in for the clean up.

"IT isn't limited to walking down the hall to see who's physically on-site, but can look within the global organization to locate an IT staff in another country with the best skills for the task at hand," he says. "There's no reason to re-create the wheel."

GTECH, too, now assigns projects to those who have the required expertise. "When teams deploy, we know we have the right people for the right job. Prior jobs were tossed back and forth ... teams evolved as the project got stuck," Caffrey says.

To make virtual teams work, you need to invest in relationship building and collaborative technologies. At PricewaterhouseCoopers, Mendonca manages employees by objectives.

"Trust is a basic premise of work relationships. If you manage by watching people work, then virtual teaming isn't a good choice," he says. "Someone can be busy, even though you don't see him sweat. Just look at the outcome of the work."

Virtual teams also require the right tools to share information. "We use tools like e-mail, Outlook scheduling, Documentum for content management and videoconferencing to keep projects going," says Darrell Delahoussaye, manager of collaborative systems for Bechtel in Houston. The firm's IT department handles 1,100 projects a year, so project management software is another necessity.

But while technology enables communication, there's still a need to meet face-to-face for important meetings. "Having a four- to five-hour discussion is hard to do by phone, especially where you need to read body language," Mendonca notes.

When you're deploying a team off-site, executives suggest sending staff a few days in advance so they can bond and address cultural barriers.

Working in virtual teams not only extends IT resources, but it adds to the quality of life. Caffrey says that at GTECH, turnover in IT is down to the single digits from a previous 20% rate.

At PricewaterhouseCoopers, Mendonca says virtual teaming lets the IT staff live where they want and work from home on Fridays. "The real value in virtual teaming is people filling the role where the need is best served," he says. ■

www.nwfusion.com

More online!

- Fusion exclusive: Get an extensive list of 63 collaboration tools that enable virtual teams.
- Expert advice: Tips on managing virtual teams.

DocFinder: 5934

IBM, Tivoli and the e-business logo are registered trademarks of International Business Machines Corporation or Tivoli Systems Inc. in the United States, other countries, or both. ©2001 IBM Corporation. All rights reserved.

THE VISITORS FROM A PARALLEL UNIVERSE SOUGHT DATA INTEGRITY OF THE HIGHEST ORDER.

TIVOLI® *FOR* STORAGE MANAGEMENT

SOFTWARE OF CHOICE ON OVER ONE MILLION SYSTEMS WORLDWIDE

e business software **tivoli.com**/store

IT'S A DIFFERENT KIND *OF* WORLD.
YOU NEED A DIFFERENT KIND *OF* SOFTWARE.

THE SCENT OF BUZZ

For most network professionals, the love of technology nourishes the soul like oxygen-pumped blood sustains the body. But while the latest gadgets and tools are great to play with, the real thrill is finding technology that meets a purpose: when VPNs give your remote offices full network access at more affordable costs; when PDAs keep your field workers in the loop; when embedded e-business applications cement your customer's loyalty.

To this purpose, the annual Buzz Issue is dedicated. In it, we examine the emerging technologies everyone is talking about. We tell how much of the talk is gospel, how much hot air, and what place these technologies should take in your enterprise network — if they deserve any place at all.

In this, our fifth annual Buzz Issue, we've got the skinny on:

- Wireless devices and networks (page 50);
- The mystical concept of Web services (page 54);
- The promise of Enum (page 60);
- Anti-DDoS products, 10G Ethernet, IP VPNs and more.

Plus, we've stockpiled even more resources for you online, where you'll find exclusive stories, tools and other goodies.

We'll also let you exercise your sense of humor with our popular Press Release Generator and Buzz Baseball game, updated for 2001.

So go on, inhale the thick, perfumed scent that cool gadgetry emits, but first take a dose of the Buzz Issue to keep your head from spinning.

Julie Bort
Executive editor, Signature Series
jbort@nww.com

THE Signature SERIES

THE SIGNATURE SERIES
The Buzz Issue is one of six bimonthly supplements providing insights, opinions and information on the biggest trends shaping the networked world. Watch for the Best Issue, our annual overview of the best of everything in networking, coming Nov. 12.

COVER ILLUSTRATION BY LAUREN URAM
INSIDE ILLUSTRATIONS BY GEOFF SMITH

The lowdown on wireless

If you believe the buzz, WAP is dead and Palm Pilots rule the enterprise, but our exclusive tests show the reverse may be true. PAGE 50

50

The Enum phenomenon

This IETF protocol could spur convergence. But Enum products and services are far from proven. PAGE 60

The anti-DDoS prescription

Will these new DDoS security products be the cure? PAGE 52

52

VPNs: IP adds a new twist

IP VPNs are the latest wave in site-to-site connectivity, but not the least painful. PAGE 65

Web services: Where middleware and XML converge

Web services could bring XML to fruition, if vendors avoid bickering over standards. PAGE 54

54

In the spin cycle

Here's an overview of five more emerging technologies whirling toward your network. PAGE 71

10Gig enterprise infiltration

An onslaught of 10G Ethernet gear is coming. When should enterprises buy in? PAGE 58

65

Signature sign-off: Silent buzz, secret buzz

This wintry economy is only a facade. PAGE 74

Visit the **Buzz portal** at www.nwfusion.com/buzz2001 for these Fusion-exclusive features:

ARTICLES

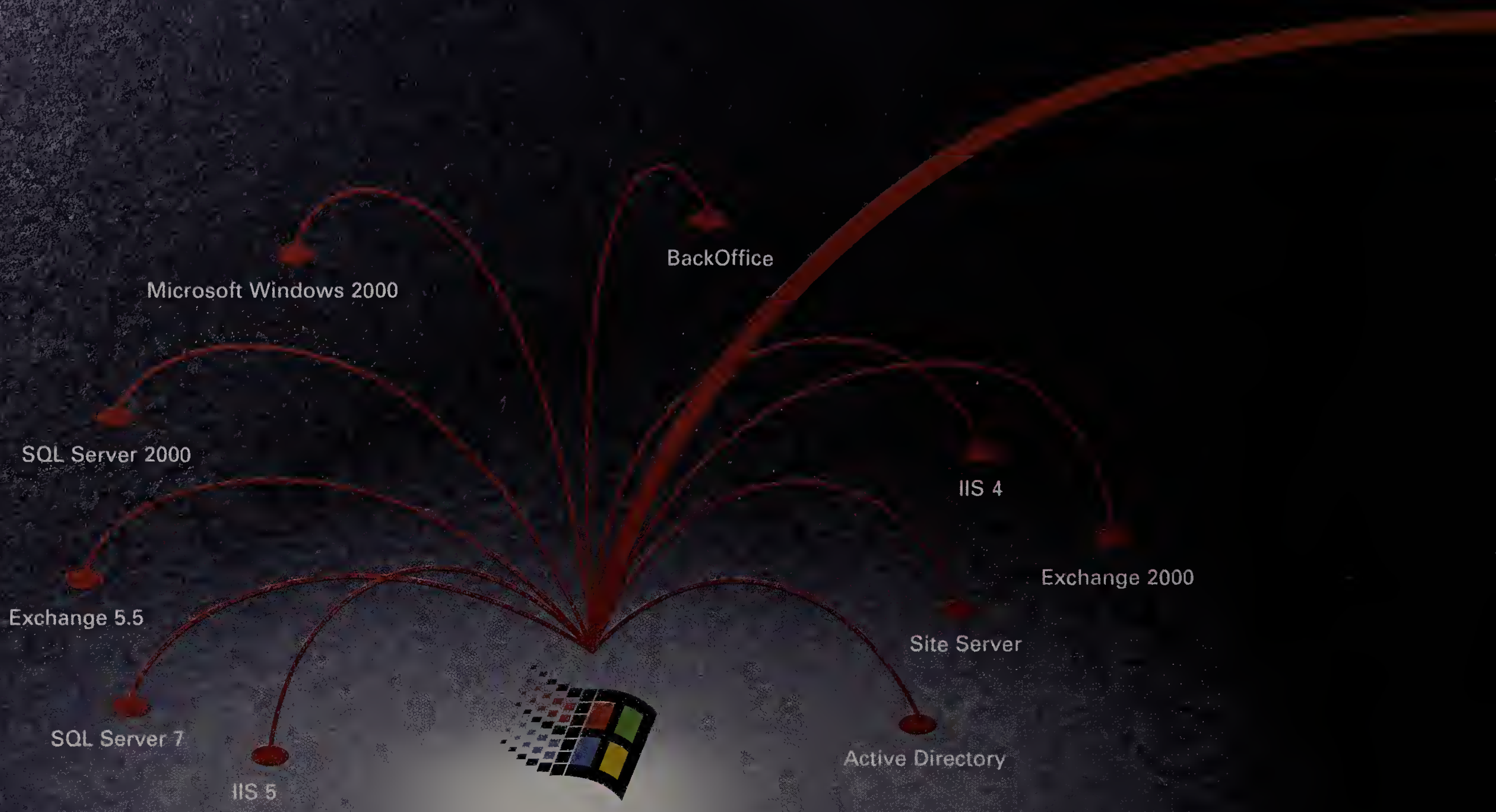
- Get updated on the 802.11a wireless LAN market and vendor list.
- Learn about IP storage, the next evolution of storage-area networks.
- Read in-depth on peer-to-peer, enterprise portals, InfiniBand, TCP/IP off-load engines, optical Ethernet metropolitan-area networks.

TOOLS

- Get buzzword definitions and related terms.
- Scan the buzzword lexicon to digest the buzz at a glance.
- View our wireless device video.
- Find the right product and service with the wireless device Buyer's Guide.

MORE

- Test yourself with the Buzz Baseball game.
- Laugh with our humorous Press Release Generator.
- Sign up for the Emerging Technologies conference.
- Peruse free newsletters and research pages on buzzword technologies.

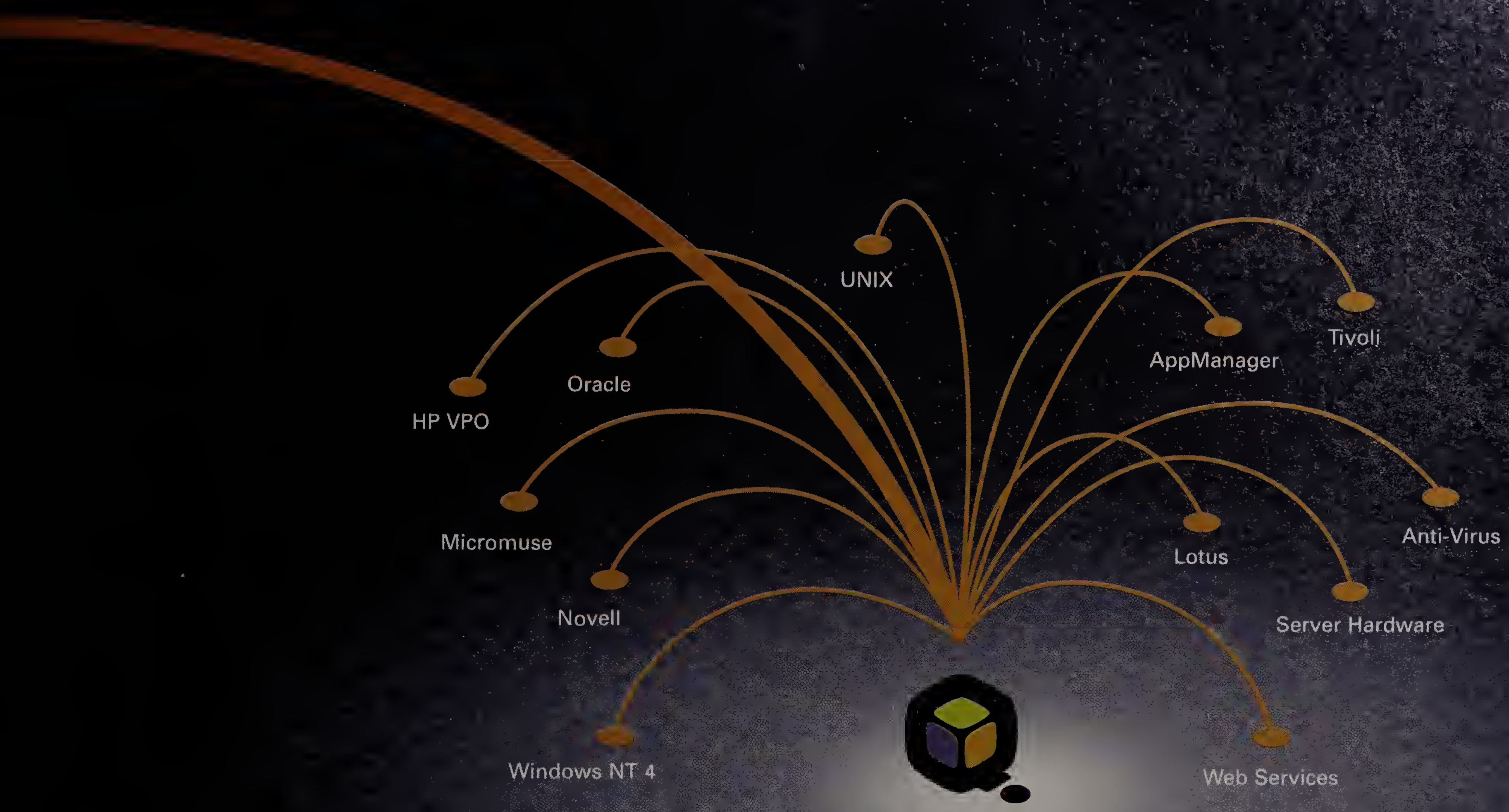


Manage Windows destinations from a central console

Microsoft | netiQ

MANAGEABILITY DEFINED

©2001 All rights reserved. Microsoft, Windows, NetIQ, and NetIQ Extended Management Packs are registered trademarks of their respective companies.
All other product and company names are the property of their respective companies.



...with connecting flights to your entire enterprise.

With Microsoft Operations Manager 2000 (MOM 2000), you can now manage more Windows applications from a centralized console. Simply put, MOM 2000 makes Windows the easiest platform in the world to manage.

NetIQ's Extended Management Packs (XMP) for MOM 2000 extend and enhance your management capabilities across your entire heterogeneous environment from the same Windows console. So now, large-scale enterprise platforms like Unix, NetWare, Oracle, Lotus, and even third-party systems management products, such as Tivoli and Micromuse, can all be managed through Windows. Managing your enterprise has never been easier.

As Microsoft's premier Independent Software Vendor (ISV) for MOM 2000, NetIQ offers the ultimate solution for managing your cross-platform e-business environment. **Microsoft and NetIQ— connecting flights daily to your entire enterprise.**

Visit us at **www.netiq.com/manageability** or **www.microsoft.com/mom** for more information.

PHOTOS BY RICHARD MORGENSTEIN

Seventeen IT professionals pounded on four types of wireless devices to test them for usability.

THE LOWDOWN ON

IF YOU BELIEVE THE BUZZ, WAP IS DEAD AND PALM PILOTS RULE THE ENTERPRISE, BUT OUR EXCLUSIVE TESTS SHOW THE REVERSE MAY BE TRUE.

BY JULIE BORT

Sure, it's hip to trash talk the Wireless Application Protocol and the cell phones that use it. Yet WAP phones score comparatively high with IT professionals looking to outfit mobile workers — providing their users need the few functions that WAP performs well.

This is just one of the surprises *Network World* unearthed during an "Internet-enabled wireless device shootout" conducted with the help of usability experts Hastings Research of Moraga, Calif.

For our tests — a cross between a product review and a survey — 17 IT managers descended on *Network World's* San Mateo, Calif., offices and pounded on four types of devices (WAP phones, a Palm OS PDA, Research in Motion's BlackBerry pager and a Windows CE Pocket PC, the Hewlett-Packard Jornada) to determine which were best for their companies. Tasks mimicked typical enterprise needs: e-mail, searching for Web pages, reading news, searching for addresses and using an online application. (See "How we did it," page 51).

Participants concluded that the wireless Internet could be a boon to a company's mobile workforce; but painfully slow network speeds and consumer orientation would make them a pain to purchase, deploy and support (see "Message to manufacturers: Gear device for the corporation," www.nwfusion.com, DocFinder: 6129). Networks often took 30 seconds or longer to process each click.

"I was surprised at how slow everything was and how bad usability was, although the interfaces themselves were fine," says participant Paul Bussiene, a project manager at Electronic Arts of Redwood City, Calif. "We're all used to instantaneous responses — to go back and forward on a Web page, for example. If my PC took this long, I'd reboot it." Participants were also appalled at the amount of configuring required to make devices enterprise-friendly.

"Vendors should be concentrating on local applications so I'm not dependent on the bandwidth," says participant S.R. Venkatramanan, a senior staff engineer for Sun.

Participants rated the ease with which they performed tasks on a 1 to 5 scale, where 1 was "very difficult or impossible" and 5, "easy."

Our test showcased each device's strengths and weaknesses. For instance, the best usability rating of the survey, a 4.8, was earned by RIM BlackBerry 957 for e-mail. This wasn't a surprise; e-mail is the BlackBerry's claim to fame.

The two poorest ratings — a 1 each — were earned by the Palm VII for reading a news story and finding an address. Slow network speeds, coupled with the inability to surf directly to a site, forced participants to search for the site first on Yahoo, then click over.

"E-mail is clearly the killer application, and with the BlackBerry I

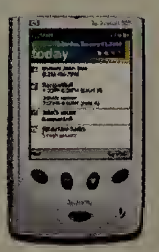
WHAT TO ASK WIRELESS INTERNET DEVICE VENDORS

- Will you preload applications and/or links to my specifications at no extra cost?
- What are my choices of networks?
- How do I locate and/or deactivate a device that has been lost or stolen?
- Can I integrate the device's e-mail system with our corporate e-mail?
- How would I have custom applications developed for the device, and how much might that cost?

WAP phones are ringers

When excluding scores for using an application, WAP phones come out ahead on usability thanks to speedy networks. On a scale of 1 to 5, 5 represented the best score.

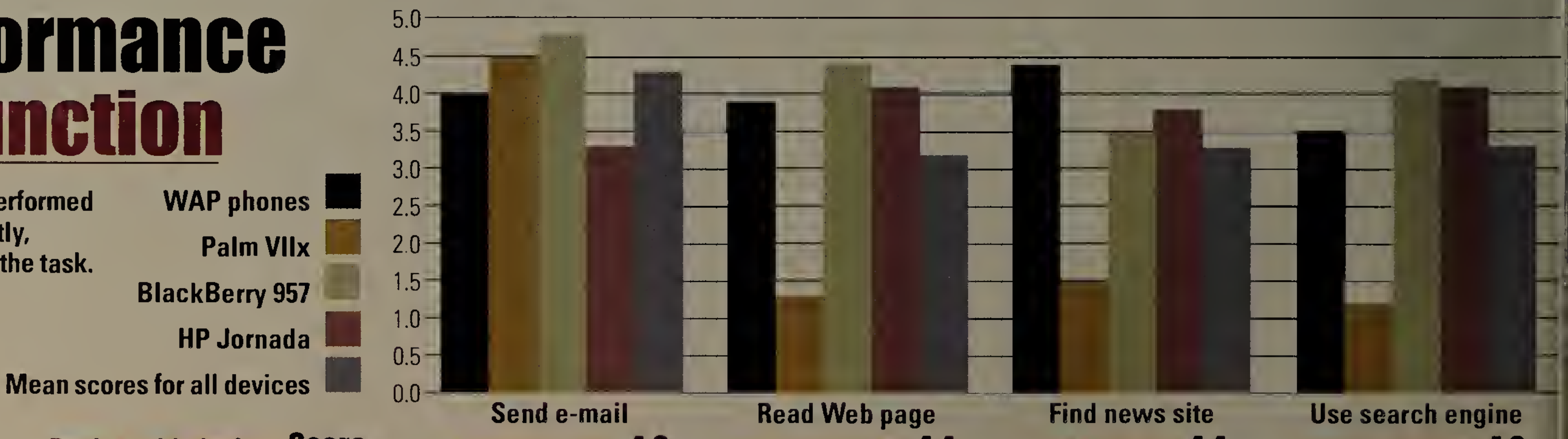
WAP phones 3.9
Phones with big buttons, large screens, and easy navigation boosted WAP usability, provided Web sites were designed for them.



HP Jornada 525 3.8
Because Pocket PC looks like Windows, the Jornada tackled the application calculation better than others. But painfully slow network and CPU speeds frustrated participants.

Performance by function

The devices performed quite differently, depending on the task.



Device with the best **Score**

Send e-mail	Read Web page	Find news site	Use search engine
BlackBerry 957 **4.8**	BlackBerry 957 **4.4**	WAP phones **4.4**	BlackBerry 957 **4.2**

WIRELESS

can integrate it with Microsoft Exchange [and] have a calendar that's wireless — its really a productive use of a device," says Mark Feldmeier, a systems analyst for Chevron. "Contrast that with the Palm VII, which has lots of consumer-oriented applications and cute things that aren't for business."

One task on our list was nearly impossible -- performing a calculation. With the WAP phones, the site returned a WML error and the page refused to load. All devices except for the Jornada struggled. The task itself earned a usability rating of 3.8.

Participants concluded that Web sites must be configured to support wireless devices, but only half would be willing to do so.

"I would text-enable the site for all to browse and use easily," says Derrick Crandell, IT manager for BKF Engineers. "I'd get rid of the graphics and stay away from color. That's slow and unnecessary, and text is fine for these devices."

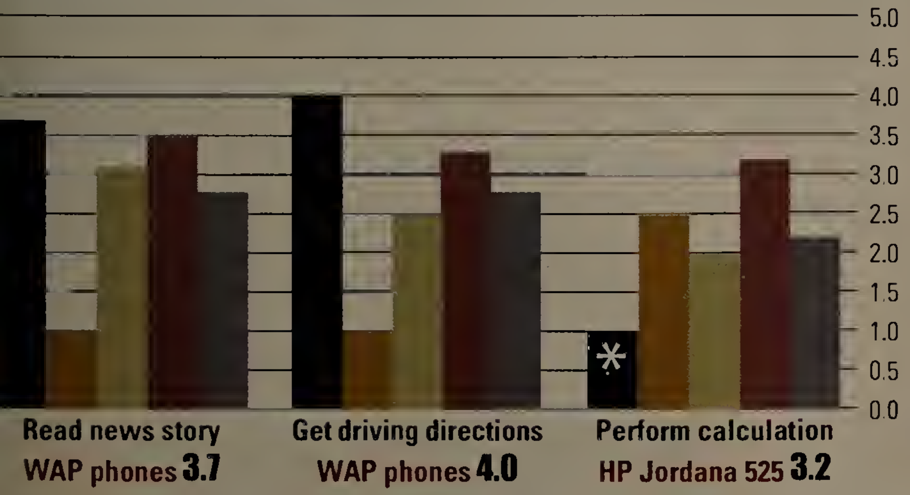
However, others say they wouldn't invest in the effort until the devices and the market mature.

"My employees and clients would never use these devices with these slow results," says Gary McCoy, executive vice president of operations for Talkway Communications. "So changing my Web site to accommodate them would be a waste." ◪

Blackberry 957 3.7
E-mail is obviously his device's sweet spot, but it also performed well with text-oriented Web sites.

Palm VIIx 1.7
While participants liked the graphical interface, business usability was hurt by the bundled consumer applications and Palm.net's slow speeds.

Mean scores for all devices 3.3
E-mail is the killer wireless application and all devices do it well. For other Web functions, particularly using applications, devices bobble on the tightrope.



* Web site inaccessible to this device during this test.

HOW WE DID IT

We tested four categories of devices: Web-enabled cell phones that use the Wireless Application Protocol; Palm OS PDAs; Research in Motion's BlackBerry pagers; and a Windows CE Pocket PC.

With the help of usability experts from Hastings Research, we selected devices that had the most intuitive interfaces.

For the WAP phones, we chose the Qualcomm TP 2100 on the Sprint PCS network for it's ergonomic design: big buttons, no clamshell, simple controls for the interface (accessible through "OK" and "CLR"). The more intuitive the interface, the quicker participants were trained and could give feedback on the tasks.

We also used the Motorola Timeport P8767 operating on the Sprint PCS network. It too had a big screen and intuitive interface. We threw in the Nextel L85 (also manufactured by Motorola), running on Nextel's iDEN network, to test a second network. Participants could choose any phone for the test or switch among them, but the data from the questionnaire was calculated for the category, not the specific phone.

In the Palm OS category, we chose the Palm VIIx because it is the de facto standard of the genre. We had two Kyocera Smartphones (one running on Verizon's Code Division Multiple Access network, the other running on Sprint PCS' network), and a Handspring Visor on OmniSky, but because all rely on the same Palm OS interface, Hastings believed their results would be similar to the Palm VIIx.

Our Pocket PC choice was the Hewlett-Packard Jornada with wireless access provided by OmniSky. We had a few Compaq iPaqs with wireless functions, but after repeated attempts to get the devices to maintain their network connections and perform our required tests in the lab, we opted not to use them. To be sure, the Jornada was also difficult to configure and of the two the vendor sent us, only one consistently held its network connection.

We used only the applications that were preloaded to get feedback on how much configuration participants thought would be necessary.

Hastings selected a series of tasks that covered the major functions a business user would perform. Participants performed the same tasks on every device, rating their perceived ease of use each time. The tasks were: searching Google for the Hastings Web site; determining hyperlinks by clicking through the Hastings site; reading data via the screen by downloading a news story from the *San Francisco Chronicle* home page; finding the address for the *Network World* San Mateo, Calif., offices via Yahoo, creating and sending an e-mail; and calculating a life insurance policy via Insurancecalculators.com.

During the tests, the WAP phones were unable to access the insurance site, although the site was previously accessible during Hastings lab tests. We therefore excluded this test from all devices' scores when calculating overall performance results.

Only IT professionals participated, and they did so during four sessions in two days. This factored out slow speeds caused by a temporary network brownout.

— *Julie Bort*

ONLINE! Get the scoop on more devices via our device Buyer's Guide (DocFinder: 6132) and view a video demonstration hosted by *Network World's* Cool Tools guru, Keith Shaw (DocFinder: 6133).

www.nwfusion.com/buzz2001

The Buzz Issue

THE ANTI-DDoS PRESCRIPTION

BY ELLEN MESSMER

WILL THESE NEW DDoS SECURITY PRODUCTS BE THE CURE?

Jay Adelson, CTO of Equinix, is encouraged by some anti-DDoS products but unimpressed with others.

Combating distributed denial-of-service attacks is one of the most difficult network security problems. So start-ups that claim to have DDoS attacks licked tend to be greeted with skepticism.

Within the past three months, four companies — Arbor Networks, Asta Networks, Captus Networks and Mazu Networks — have started shipping equipment to fight DDoS attacks. The companies claim to be able to identify such attacks and help users take steps to stop them.

Hackers launch DDoS attacks by installing "zombie" code on numerous compromised servers, using readily available freeware tools. The code lets the hackers use those servers to launch a blitzkrieg of packets to the victim's site. That's what the teenage Canadian hacker Mafiaboy did a year and a half ago when he single-handedly unleashed DDoS attacks on Yahoo, Schwab, Amazon.com, eTrade, CNN.com and other Web sites during a week-long spree.

To date, combating such attacks has required network engineers at ISPs and Web server farms to spend hours manually analyzing traffic logs, trying to filter out the "bad" attack traffic from the "good" legitimate customer traffic. The four start-ups claim their equipment can automate this chore and provide a timely response to thwart attacks.

Are we saved at last?

Not yet. Even if the equipment from the start-ups works as advertised, none of the gear is as yet deployed in ISP networks or Web hosting centers where it would help their customers. And there's only scant evidence, most of it anecdotal, that any of the products work as advertised.

"I'm skeptical," says Marcus Ranum, NFR Security's CTO, and the security guru who invented the first commercial firewall and some of the earliest intrusion-detection equipment a decade ago. Besides, he says, "detecting DDoS isn't hard — your Web site is down!"

The trick is sensing a DDoS attack early enough and automating the response so you have a chance of surviving it. None of the four vendors have yet proven their equipment can do this, although they are making "ridiculous claims" based on their own lab tests, Ranum says.

Gartner security analyst John Pescatore agrees it will take real-world trial by fire for the start-ups' equipment to gain credibility.

Making anti-DDoS work

The Arbor, Asta and Mazu equipment is somewhat similar in design. Each vendor's appliance is directly attached to or sits in front of a router or switch. The devices are intended to be positioned at various high-traffic points in the network, including ISP network access points and in front of high-volume Web servers. The appliances monitor and analyze traffic and can recognize packets that are part of an incoming DDoS attack, the vendors say. They can also suggest ways the ISP's routers can filter out the packets.

The Captus gear likewise finds and filters out DDoS traffic, but it doubles as a high-bandwidth firewall. As such, it sits toward the Internet's perimeter, typically at Web hosting sites and large user locations.

The Mazu equipment, called TrafficMaster Inspector for DDoS, is under test at Equinix, the Mountain View, Calif., firm that manages six network access points for peer-to-peer Internet connections by ISPs, telecom companies and large corporations.

Equinix has a parallel network that carries duplicated traffic for experimental purposes, such as testing anti-DDoS equipment with customers. These customers include AT&T, WorldCom, Level 3, Qwest, Williams and Akamai, in addition to hosting companies IBM and SiteSmith. Yahoo and Schwab — companies large enough to maintain their own peering point at Equinix — are also involved in the anti-DDos tests.

"[TrafficMaster] can recognize a DDoS attack," says Jay Adelson, Equinix founder and CTO. He is not yet convinced that the Asta equipment, which he has also been testing, can do this.

Just identifying DDoS attacks doesn't sound too difficult, but it's critical to be able to differentiate a DDoS attack from a traffic surge caused by something such as "putting the Monica Lewinsky papers online," Adelson says.

The anti-DDoS start-ups

Company	Product name	Web address
Arbor Networks	Peakflow DoS	www.arbornetworks.com
Asta Networks	Vantage System	www.astanetworks.com
Captus Networks	CaptIO/CaptIO-G	www.captusnetworks.com
Mazu Networks	TrafficMaster Inspector for DDoS TrafficMaster Enforcer for DDoS	www.mazunetworks.com

What Mazu has accomplished "represents a breakthrough," to the problem, Adelson asserts. "After years of research, it's like a white paper on DDoS turning into real life."

However, Equinix hasn't completed the required tests to find out whether the Mazu gear can reliably recommend a response to a DDoS attack.

Anti-DDoS equipment is under test on at least two other networks, with results similar to those at Equinix: encouraging but inconclusive. Asta's Vantage System is at work on Internet2, the university-backed research network managed at Indiana University. Merit Network in Ann Arbor, Mich., is testing Arbor's PeakFlow DoS equipment.

PeakFlow can't always differentiate a DDoS attack from the occasional megabyte file transfers that the scientific community may indulge in, says Jeff Ogden, Merit's associate director for high-performance networking. But the Arbor gear has made a big difference for Merit's network engineers by quickly detailing the source of traffic surges and suggesting filtering processes.

"These procedures help alert the engineers to what's going on," Ogden says, whereas previously they were much more in the dark. ◪

PHOTO: GARY LAUFMAN

WHAT TO ASK ANTI-DDoS VENDORS

- Does your equipment seek to counter distributed denial-of-service attacks or just plain old DoS?
- How does your product differentiate good network traffic from bad?
- How automated is the response to the distributed denial-of-service attack?

WEBSENSE
Happenin' Jobs
music
MP3
Scoreboard
Place Bid
LAUNDRY INSTRUCTIONS
1. Install filter with your firewall, cache engine, or proxy server.
2. Forget about it.
inspected by our partners:
CHECK POINT™ Software Technologies Ltd.
NetworkAppliance®
NETSCREEN
inktomi
CacheFlow

© 2001 Websense Inc. All rights reserved. Websense is a registered trademark of Websense Inc. All other trademarks are the properties of their respective companies.

Websense is the simplest, most transparent Web filtering tool around. And the most recommended. Ask your systems integrator. Ask your consultant. Heck, call our partners direct. You'll find out why Websense is installed in companies as small as 50 people, yet covers more than 250 *Fortune 500* firms. Comprehensive reporting. Automatic nightly updates. Scalability up to 100,000 users. And filtering flexibility to satisfy your CEO's every quirk. Best of all, it's self-cleaning. So you won't have to get your hands dirty. Try it at www.websense.com.

www.websense.com
WEBSENSE
EMPLOYEE INTERNET MANAGEMENT

NASDAQ: WBSN

The BUZZ Issue

BY JOHN FONTANA

WEB

WHERE MIDDLEWARE AND XML CONVERGE

WEB SERVICES COULD BRING XML TO FRUITION, IF VENDORS AVOID BICKERING OVER STANDARDS.

Web services. Those words are like a constant ringing in the ears of IT executives.

The hype ranges from Web services that automobile computers will use to conduct real-time auctions to get the best gasoline prices, to those that will electronically transfer medical and insurance records to an emergency room.

But those scenarios are best left for George Jetson, the space-age cartoon character. The real story is more Fred Flintstone at this point, as the industry tries to cut rock-solid blocks to build a foundation.

Plain and simple, Web services are middleware based on XML. Web services are the next evolutionary step in object-oriented programming for business-to-business e-commerce. Common Object Request Broker Architecture and Distributed Component Object Model couldn't get it done, and electronic data interchange (EDI) was too expensive and specialized.

"It's all about middleware," says Don O'Toole, directory of Web services marketing for IBM in Raleigh, N.C. "It's not sexy, but it's essential."

Web services are what will bring all the buzz of XML into fruition. Web services are bits of reusable code that let two or more Web-based applications talk to each other. This code could be used to build new applications, or it could be wrapped around legacy applications. With Web services in the middle — or functioning as an independent application itself — Web-based applications can share data among themselves regardless of their underlying programming languages or platforms.

Like all object-oriented approaches, Web services require a framework of standards to be interoperable. The first set, currently in development, covers how they talk, how they describe what functions they can perform and how they advertise themselves.

Should Web services take off — and the indications are strong that they will — the cost of integrating applications over the Web should be considerably reduced over the current "spaghetti code" method of hand-coding each interface. The current method can add up to nearly $1 million to research, test, deploy, license and support, according to Forrester Research.

"Integration is the heart of Web services," says Jim Price, COO of Eskye.com in Indianapolis, an early adopter of Web services. "If we had to take these integration projects one by one, we would be doing them the rest of our lives and we wouldn't get any business done."

But Web services won't usher in an interconnected, barrier-free world, experts say. It will only ease integration of data and applications. And it will only do that if vendors agree to uniform standards for Web services.

The buzz today is threefold. The first area is around the standards that will be used by developers to write Web services; second is what can be accomplished today in the enterprise; and third is what vendors are doing to court IT executives interested in Web services infrastructures.

Building the standards

The foundation of Web services standards is XML. From XML spawns three critical legs of Web services, all of which are still in development: Simple Object Access Protocol (SOAP), Web Service Description Language (WSDL) and Universal Description, Discovery and Integration (UDDI).

Web services are nothing without XML standards. If the vendors and standards bodies can't come up with a core set, then Web services will be the next great vaporware. The vendors say they understand this truth.

"We are all working hard to avoid having the

WHAT TO ASK WEB SERVICES PLATFORM VENDORS

- Which emerging Web services standards do you support (SOAP, UDDI, WSDL) and what is your plan for supporting any remaining ones?
- What other emerging standards do you support (ebXML, XML-RPC)?
- Which environments do you use? Microsoft's .Net framework or J2EE?
- What pieces of infrastructure do you supply (such as application server and database) and which of these support Web services standards?
- What is your security model?

SERVICES

industry fracture," says Bob Sutor, director of e-business standards strategy for IBM. "We need this basic tripod to get started."

SOAP is the message protocol that lets Web services talk. IBM, Microsoft and others released Version 1.1 in April 2000. Late last year, the World Wide Web Consortium (W3C) formalized the standards process around SOAP by forming the XML Protocol Working Group. In July, the group issued the first public working draft of SOAP 1.2.

WSDL, which was submitted in January to the W3C, lets a Web service describe what it can do, what messages it accepts and what response it returns.

UDDI is a repository for locating Web services. Version 2 was released in June, and the third and final version is due next year. Creators Microsoft, IBM and Ariba are running test implementations.

What's missing are standards for message routing and reliability, transactions and workflow, and security. Security is perhaps the biggest issue, especially when executable code is shared, says Daryl Plummer, an analyst with Gartner.

"That is all very complex, and then you still have to talk about scalability," Plummer says.

Despite some vendors' sunny outlook, the threat of fracture is always present. The Organization for the Advancement of Structured Information Standards is mirroring W3C's efforts. That group is working on something similar to the Web services standard called ebXML, which has its roots in EDI. In addition, there is a standard called XML-RPC, which essentially is a lightweight counterpart to SOAP.

Early indications are that these efforts will converge. But IT executives should watch closely to determine if the so-called standards are truly that or just another battle of wills between engineers and vendors. If the latter threatens, with vendors extending standards and otherwise not following the protocols, then IT executives should step in and pressure their vendors to cooperate.

High-tech frontiersmen

Even as standards are being formulated, early adopters are testing their worthiness with some success. The fact that current Web infrastructures don't need to change dramatically has helped the process, vendors say.

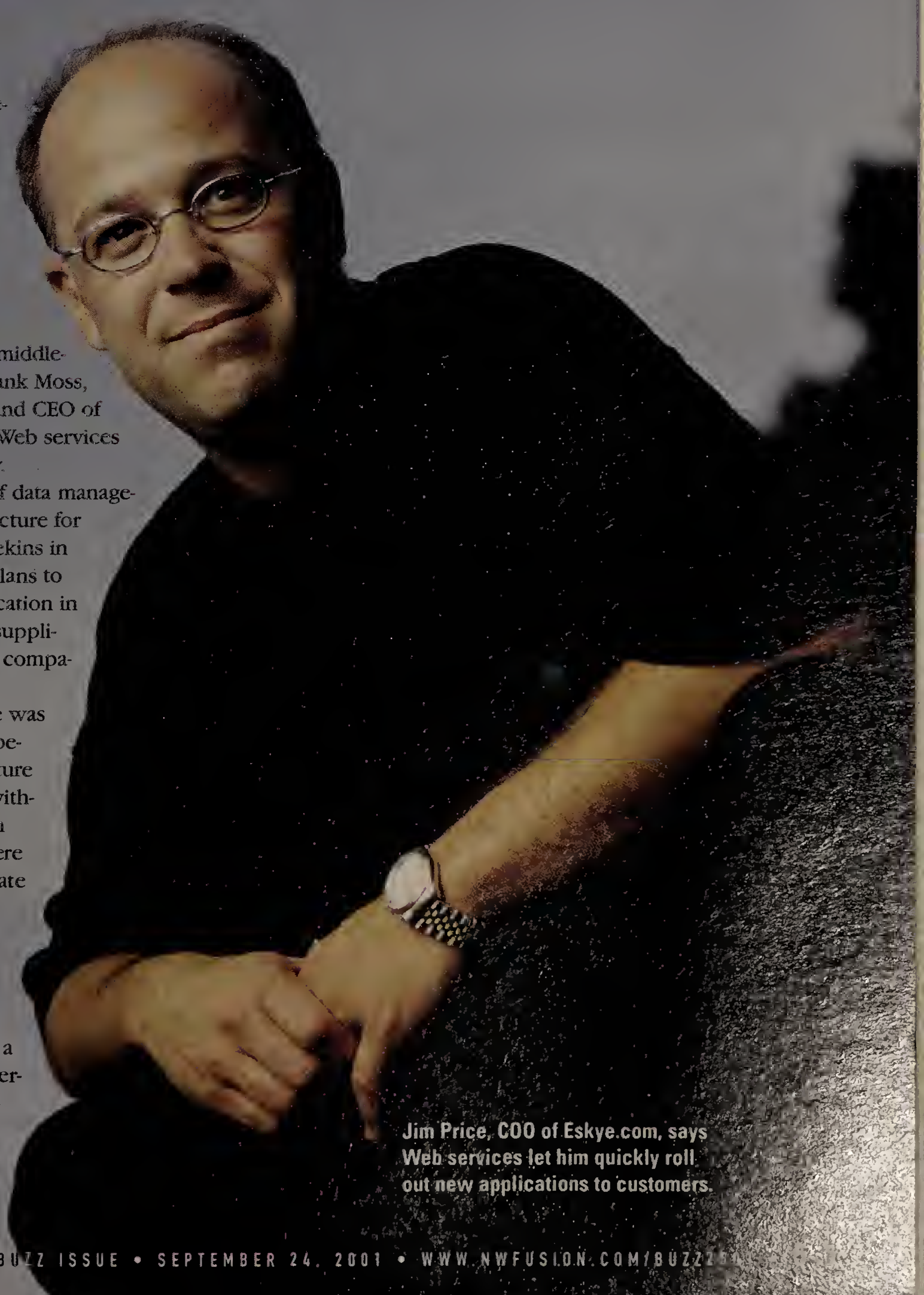
"The change is from the middleware up, not down," says Frank Moss, a pioneer in the XML field and CEO of Bowstreet, which develops Web services software called Web Factory.

Randy Mowen, director of data management and e-business architecture for moving and storage giant Bekins in Hillside, Ill., agrees. Bekins plans to roll out a Web service application in November that lets agents, suppliers and third-party trucking companies bid on shipping jobs.

"Creating the Web service was simple and straightforward because we had the infrastructure [to support Web services]; without that it's difficult," Mowen says. "Once we put it out there all our customers can integrate it with their own capacity planning systems."

It also lets Bekins' business partners tender bids more quickly because the three or four steps to verify a bid are built into one Web service that lets all the applications talk to one another.

"It will be a year or two before we see if Web ser-



Jim Price, COO of Eskye.com, says Web services let him quickly roll out new applications to customers.

THE EVOLUTION OF WEB SERVICES

The following chart compares Web services with older, traditional integration technologies.

Old	New
Hardwired applications Web-extended client/server Content management Static, one-size-fits-all portals	**Intelligent personalized portals** **Dynamic Web applications** Dynamic assembly of content
Traditional middleware Application server Enterprise application integration, hand-coded business-to-business integration Server and network management	**Web services middleware** XML, UDDI, SOAP, J2EE or .Net server
Back end Legacy data and apps Client/server data and applications Content	**Back end** **External Web services**

SOURCE: BOWSTREET

ices will be widely embraced," Mowen says. "If they are, it will be life altering."

Galileo International of Denver, which provides services to the travel industry, is also jumping on board with a three-year plan it calls Business Enabled Service Transformation. The program aims to use Web services to simplify the supply chain and collaboration between Galileo and 43,000 travel agents, 505 airlines, 37 car rental companies, 47,000 hotel properties, 368 tour operators and major cruise lines that it connects with worldwide.

That's a lot of integration work, some of which is solved today with direct connections to business partners. Web services would not only ease existing integration headaches but let new connections and applications be built quickly, says Chuck Barnhart, vice president of application development.

Galileo plans to create hundreds of Web services components for such things as customer profiles and preferences, policies for point-of-sale procedures, management of vendor inventory and extending features to its Web site.

"We can then aggregate those components into new applications, extend our business without having to build legacy applications, and we can speed our time to market," says Glen Zwart, Galileo's principal engineer. "The walls are starting to come down across our platforms."

Eskye.com is seeing the same crumbling of barriers. Eskye.com brokers relationships between retailers, distributors and suppliers in the beverage and alcohol industry. In July, the company launched its ebots R (electronic beverage order and tracking system for retailers), a set of standard interfaces built onto order, freight and shipping processes that retailers and distributors can plug into. Previously, the company used antiquated and separate applications, including FTP, to send and receive product catalogs.

Eskye.com also is developing ebots SL (supply link), which are Web services to fully integrate with its suppliers' enterprise resource planning systems.

"The key benefit will be the ability to easily bring multiple applications to retailers, distributors and suppliers," COO Jim Price says. "Web services mean reduced integration time and speed of delivery of those applications."

But Price admits that creating all these Web services won't be easy. "Obviously, we have to walk before we can run," he says.

Clash of the Titans

That includes navigating through the crucial but hard choice of platforms and development tools, says Peter Urban, an AMR Research analyst.

Microsoft, Sun, IBM, Oracle, Hewlett-Packard and BEA Systems are all in the market, and each wants to be a one-stop shop. Still the basic choice boils down to Sun's Java language and Java 2 Platform Enterprise Edition (J2EE) framework, or Microsoft's C# language and .Net framework.

Microsoft has been criticized for making .Net too proprietary. But in its defense, Microsoft has mapped many different languages to .Net. In Sun's corner is the fact that Java will run on many platforms, and other vendors, including IBM and BEA, have already based their offerings on the J2EE platform.

The crux is this: Web services must be written to execute in a certain run-time environment because those written for Microsoft's .Net framework and run-time engine will not execute on a J2EE platform. However, Web services running on those two platforms can talk to each other using SOAP.

Microsoft, therefore, is scrambling to get its six million developers sold on C# and Visual Studio.Net, which is expected to ship by year-end. It also has branded nine servers under the .Net banner to create a back-end infrastructure for Web services.

"The vendors will not compete at the API level," says Paul Flessner, senior vice president for .Net Enterprise Servers. Rather, they are competing for the entire package – development tools, servers and operating systems.

Sun is developing Sun Open Net Environment, a combination of iPlanet application server and Sun's Forte development tools. Sun says it will add support for SOAP by year-end and also is developing JaxPacks, which will map XML to Java.

"We know we have to be 100% buzz word compliant," says Matt Herring, director of marketing for Forte tools. "But our goal is to provide the open architecture and compete on implementation." Sun also is proposing to develop "smart" Web services that understand what they are doing, for who and why.

IBM is also building an infrastructure story with its Dynamic E-Business strategy around WebSphere, DB2, Tivoli Systems and Lotus. Using Web services standards built into those platforms, Tivoli will provide security, management and Lotus collaboration tools like instant messaging. IBM is committed to Java and so far is ignoring C# for its development environment.

BEA is making noise with its WebLogic application server and its E-Business Productivity tools.

Meanwhile, Oracle has built its Oracle Dynamic Services (ODS) around the recently released Oracle 9i Application Server. ODS is packaged with Oracle's Internet Developer's Suite, which supports both Java and XML using JDeveloper. The company added support for SOAP but is missing support for other standards.

Hewlett-Packard, once a Web services pioneer, is racing to keep pace. In February, it rallied its Web services story around its NetAction application server, which it acquired from Bluestone, and HP OpenView for systems management. In April, it finally added development tools in an alliance with WebGain.

But the vendors are all in various stages of rollouts, with the bottom line being that Web services infrastructure is still 12 to 24 months from maturing. Core products may be available, but updating everything, tying it together and incorporating Web services standards will take time for vendors and companies.

Gartner predicts most platforms will support the basic Web services infrastructure — SOAP, WSDL and UDDI — by 2003 at the latest. At that time, Gartner predicts, 75% of all Web services will run on infrastructures provided by IBM, Microsoft and two or three other vendors to be determined.

But the best advice is to ignore the buzz and proceed slowly.

"The important thing for most organizations to understand in 2001 is that they are not likely to get whipped by the competition based on Web services," says Evan Quinn, an analyst with Hurwitz Group. "There is still time to get educated." ◪

ONLINE! Are you in the buzzword know? Test your network vocabulary with our second annual Buzz Baseball game (DocFinder: 6131).

www.nwfusion.com/buzz2001

©2001 SAP AG. SAP, SAP and the SAP logo are registered trademarks of SAP AG in Germany and several other countries.

THE BEST WAY TO MANAGE A SUPPLY CHAIN IS TO KNOW THE DEMAND CHAIN.

A supply chain is built around demand. And because demand can go from overwhelming to underwhelming in minutes, it can wreak havoc. That's why the mySAP™ Supply Chain Management solution integrates seamlessly to handle the hazards of supply and demand. It puts customers at the center of a networked supply chain, helping you anticipate market changes and fill orders faster. It also allows for high visibility, so vendors and suppliers can work together efficiently. Which makes it the only collaborative SCM solution that can turn a supply chain into a profit center. For more info, call 800 872 1727 or head to www.sap.com

THE BEST-RUN E-BUSINESSES RUN SAP

SAP™

The Buzz Issue

BY PHIL HOCHMUTH

10GIG ENTERPRISE INFILTRATION

AN ONSLAUGHT OF 10G ETHERNET GEAR IS COMING. WHEN SHOULD ENTERPRISES BUY IN?

While vendors have been talking up prestandard 10 Gigabit Ethernet products since spring, experts say only the largest enterprises will be buying the high-speed gear immediately. High prices, combined with limited demand among enterprise users, will make 10G Ethernet a carrier technology for the next few years.

Most Gigabit Ethernet switch vendors have either announced their 10G Ethernet plans or hinted the technology is just around the corner for their enterprise and carrier product lines. Avaya, Enterasys Networks, Foundry Networks, Nortel and Riverstone Networks have all announced 10G Ethernet products, whether new stand-alone switches — such as Enterasys' Matrix E-1 or Riverstone's RS16000 — or 10G modules for existing products.

At trade shows during the past year, Cisco has shown 10G modules for its Catalyst 6500 and OSR 7500 switches, but has yet to formally announce a product. Extreme Networks says it will not have a product until the standard is complete sometime between March and June next year.

Service providers that sell optical Ethernet WAN and metropolitan-area network (MAN) services (such as Yipes Communications and Telseon), as well as traditional carriers trying to get into the MAN game, are the ones chomping at the fiber bit to get ahold of these products. Cisco, Extreme, Foundry and Nortel are betting heavily on 10G Ethernet in that market, as is Riverstone, which sells only to carriers.

As with most new technologies, early users will pay a premium.

"Right now, we're looking at a per-port cost of about $39,000," says Katrina Dahlquist, senior analyst with market research firm IDC.

With the average Gigabit Ethernet port price around $1,000, she says, it will be more cost-effective for most companies to group up to eight Gigabit links using the 802.3ad standard for link aggregation, which also provides fault tolerance if links go down.

"We're really looking at the WAN as the best application for 10 Gigabit, for connections between campus environments over several miles," Dahlquist says.

Still, vendors are covering all bases by making the 10G Ethernet case for the enterprise. Switch makers that focus squarely on the enterprise, such as Avaya and Enterasys, are among the companies leading the 10G Ethernet charge for long-range, campus backbone connections.

Their pitches are not falling on deaf ears among users with massive bandwidth requirements.

"I could use 10 Gigabit links today to connect our higher-density wiring closets to the network backbone," says Mike Cranmer, assistant vice president of technical operations at ING Variable Annuities in West Chester, Pa.

Cranmer, who uses X-Pedition backbone switches from Enterasys, says he isn't shopping for 10G Ethernet products yet, but has seen utilization occasionally hit 80% on single Gigabit links from wiring closets to the backbone. He pools multiple Gigabit links to get around the problem, but that chews up Gigabit port real estate.

"A single 10 Gig uplink would give me the density and capacity I need for the foreseeable future," he says.

Lawrence Livermore National Laboratory could use 10G Ethernet for intracampus connectivity, says Dave Wiltzius, network division leader for the San Francisco-area lab, which is run by the U.S. Energy Department and the University of California. The lab uses eight Catalyst 6509 switches in eight different buildings to connect PCs, servers and two IBM supercomputers over a Gigabit Ethernet network.

For its backbone, the lab uses Cisco's proprietary Gigabit EtherChannel technology to pool eight Gigabit links into one logical link. The lab installs all its fiber to connect buildings that may be miles apart.

"Building to building, it cost us about $20,000 [to install] about 24 fibers," Wiltzius says. As it looks to expand the fiber net to additional sites throughout the Bay area, the lab will have 10G Ethernet in mind.

"With those costs, we can look at 10 Gig becoming cost-effective by replacing 10 fiber pairs with one fiber pair."

There is a risk involved in terms of redundancy, he notes. If that one fiber fails, there goes the entire backbone, whereas the virtual trunk only loses 1G bit/sec of throughput if one or two fibers go dark.

Despite how it is used, there is no question that 10G Ethernet is coming.

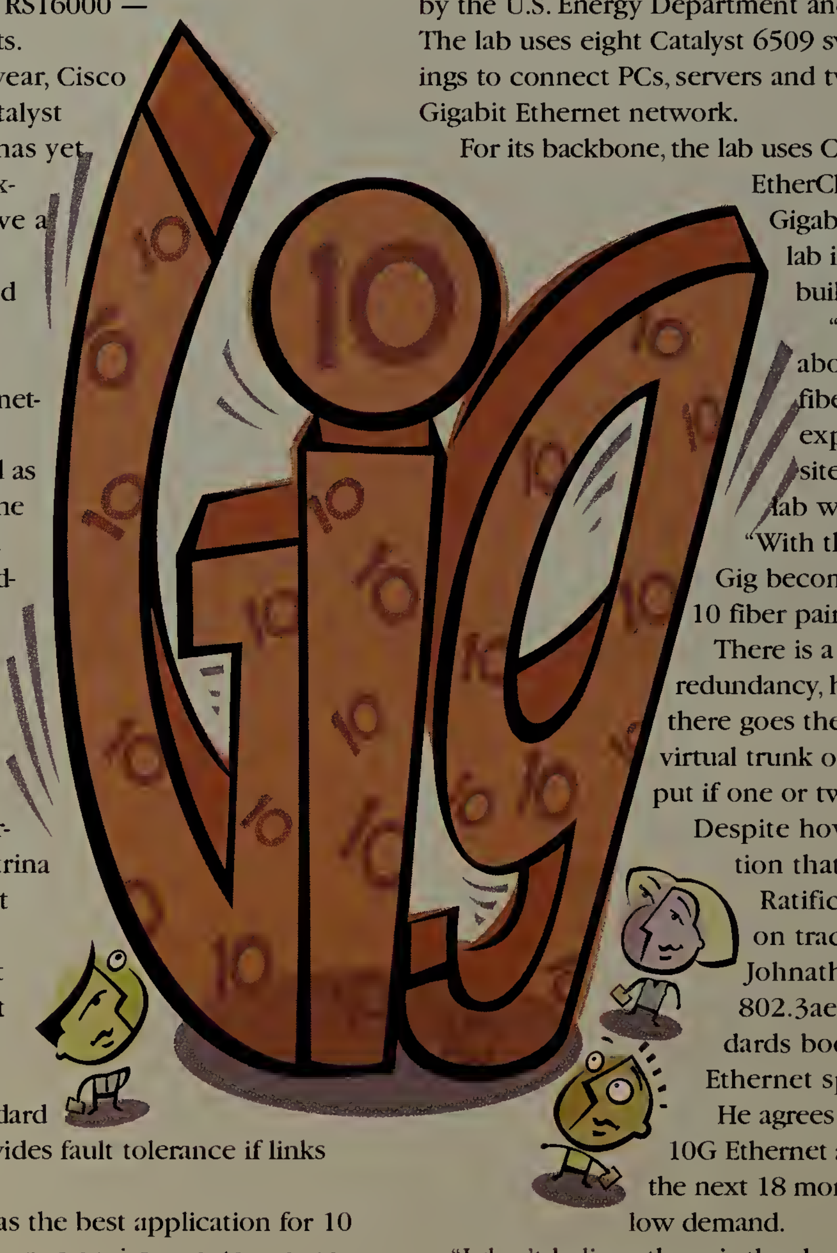
Ratification of the standard is still on track for next spring, says Johnathan Thatcher, chair of the IEEE 802.3ae task force, the primary standards body that is shaping 10G Ethernet specifications.

He agrees that two factors will hinder 10G Ethernet adoption in companies during the next 18 months: high price and relatively low demand.

"I don't believe there is the degree of latent demand with enterprises for 10 Gigabit as much as there was a pent-up demand for Gigabit Ethernet," Thatcher says.

Still, he sees 10G Ethernet adoption as inevitable as prices drop and optical components become more available and proven.

"The per-port prices that are starting to come out [for 10G Ethernet] are nowhere near — and are probably an order of magnitude more than — what they will be once components and subsystems are manufactured in volume," he says. ◪



WHAT TO ASK 10G ETHERNET VENDORS

- Which is more cost-effective: eight Gigabit Ethernet ports trunked together or a single 10G Ethernet port?
- How much space will 10G modules take up in your switch chassis?
- Does swapping out 16 gigabit ports on a blade for a single- or dual-port 10G module make sense?
- If your product is pre-standard, what kind of upgrade will be required once the standard is set? Do you guarantee that you will meet the standard?

FREE COPY OF
"INSIDE INTERNET SECURITY: WHAT HACKERS DON'T WANT YOU TO KNOW."

SORRY, HACKERS.

(a.k.a.: the antihacker manifesto)

HOW CAN YOU BUILD OR RUN A SECURE E-BUSINESS INFRASTRUCTURE IN THE FACE OF UNPREDICTABLE HACKER ATTACKS? First, think like a hacker. Look at your infrastructure (your servers, software and storage systems) the way hackers do. Read *Inside Internet Security* by Jeff Crume, Tivoli Systems' unhacker guru and CISSP security expert. Get his advice-filled 270-page book. *It's yours free for registering by phone or online (see below).*

Second, help protect your infrastructure with proven management tools like the Tivoli® Security Solution from IBM.

The solution gives you a broad, flexible defense. It helps unite your core security technologies around common security policies. You can centrally implement a consistent access control policy while you centrally manage your defenses. In real time, you can identify and respond to threats anywhere across your entire enterprise. Plus, even as your infrastructure evolves toward a proliferation of systems, your administrators can still keep centralized control.

You can help secure your existing applications without making changes to them, protect your customers' personally identifiable information, and allow e-business transactions to safely travel across your organizational boundaries.

Need more? Ask about our IBM Security and Privacy Services for a full security checkup. In fact, with our 90,000+ Business Partners, we can help you build/run an infrastructure that is better in every way that counts. Visit our Web site or call today for your free antihacker manifesto.

Free book: 1 800 IBM 7080, ask for Security; or
ibm.com/e-business/soready/p1

IBM®

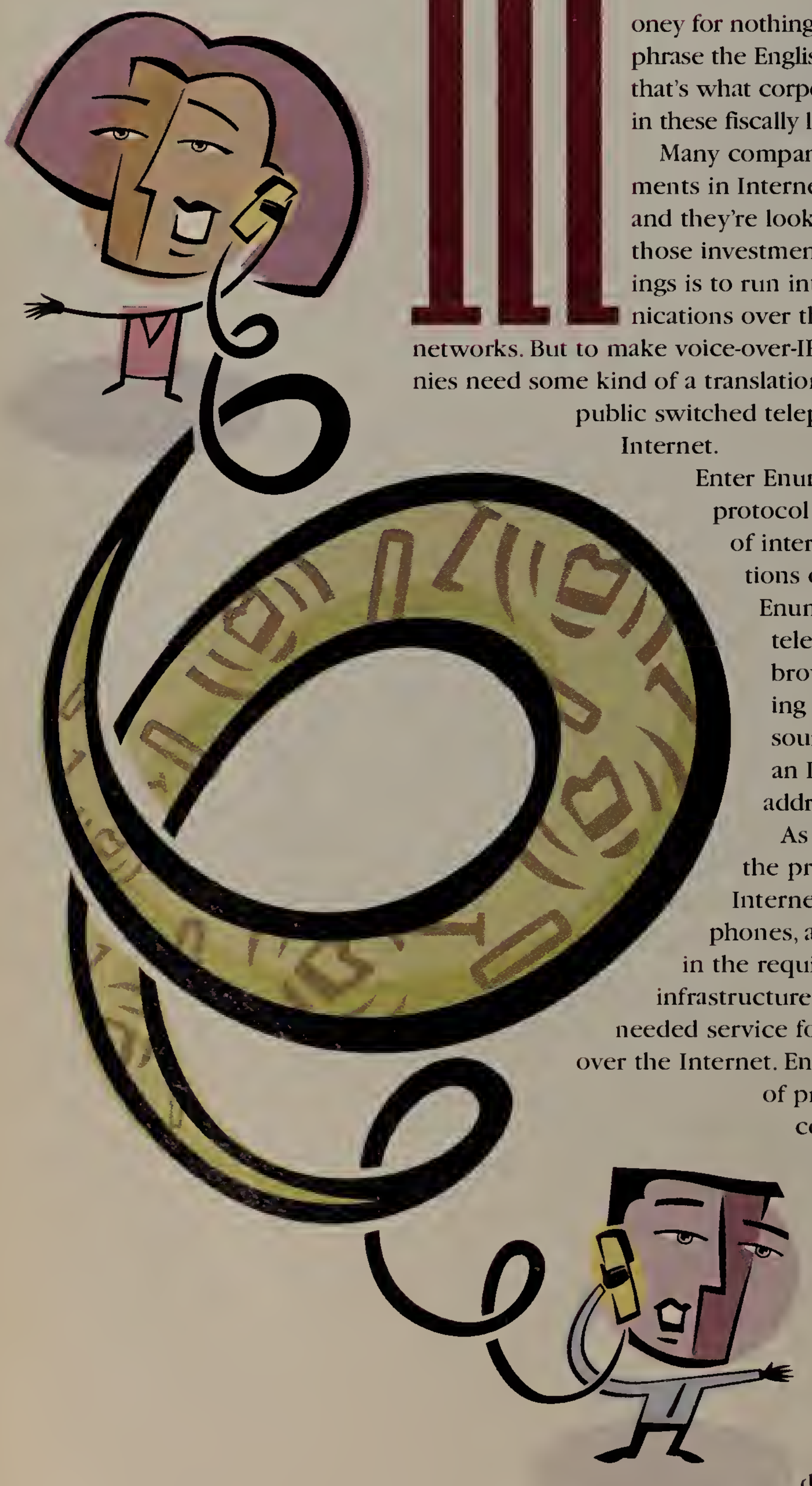
LEGAL NOTE: IBM, Tivoli, the e-business logo and other marks designated ® or ™ are trademarks of International Business Machines Corporation in the United States and/or other countries. Other company, product and service names may be trademarks or service marks of others. © 2001 IBM Corporation. All rights reserved. Limit one book per respondent. **Offer ends 12.31.01.**

The Buzz Issue

THE ENUM PHENOMENON

BY CAROLYN DUFFY MARSAN

THIS IETF PROTOCOL COULD SPUR CONVERGENCE. BUT ENUM PRODUCTS AND SERVICES ARE FAR FROM PROVEN.



Money for nothing and calls for free. To paraphrase the English rock band Dire Straits, that's what corporate network managers want in these fiscally lean times.

Many companies have made major investments in Internet-based backbone networks, and they're looking for ways to leverage those investments. One way to ring up savings is to run internal voice and fax communications over these already-purchased IP networks. But to make voice-over-IP applications work, companies need some kind of a translation mechanism between the public switched telephone network and the Internet.

Enter Enum, a simple but powerful protocol that's generating a great deal of interest among telecommunications carriers and Internet players. Enum lets an end user type a telephone number into a Web browser and access a URL listing the available Internet resources for that number, such as an IP telephony address, e-mail address and Web address.

As vendors roll out support for the protocol in devices such as Internet-enabled PBXs and telephones, and service providers build in the required directories and other infrastructure, Enum will enable a much-needed service for initiating telephone calls over the Internet. Enum also offers the promise of providing a single point of contact for multiple communications devices, from phones to PCs to fax machines.

"The most significant interest in Enum is for IP telephony," says Tony Rutkowski, vice president of Internet strategy at VeriSign of Mountain View, Calif., which plans to introduce private Enum services for corporations later this year.

Enum evolution

The Internet Engineering Task Force finalized the Enum specification about a year ago, and the first Enum products and services are due out this fall. Among the companies that helped develop Enum were Cisco, Lucent, Nortel and AT&T.

Enum is expected to roll out in the corporate market first. Companies that run their own telephone systems will be able to map their employees' telephone numbers to a private Enum service that points to corresponding IP telephony addresses, e-mail addresses, fax numbers and cell phone numbers. These companies can use Enum to direct internal telephone calls to their IP backbone networks, which will cut the cost of long-distance calls between branch offices.

"For really large enterprises with multiple call servers, they can use Enum internally to cut down costs," says Jim Pilgrim, an engineer with Alcatel tracking Enum's development in the standards bodies. "But for most companies, the real savings will come from external phone calling" between companies over the Internet, Pilgrim says.

These savings won't materialize until Enum is available on the Internet and a critical mass of corporate users evolves. (See "Enum's ROI," page 62.) And that could take years because policy makers are still debating how to introduce Enum into the Internet's DNS.

Telephone numbers are highly regulated, with each country having sovereignty over the assignment of numbers within its country code. At issue is whether countries also will have authority over Enum registrations and how best to support competitive but interoperable Enum services.

Most telephony and Internet companies favor a single, global top-level domain for Enum services dubbed Tier 0. Each country would have a central Tier 1 registry that operates underneath the Enum top-level domain. Service providers would offer corporate Enum registration services at the Tier 2 level.

A handful of companies, including VeriSign, support the idea of multiple top-level domains for Enum services.

The International Telecommunication Union (ITU), which oversees telephone numbering on a global basis, is meeting this month to discuss its Enum strategy. Vendors say they hope consensus will emerge on how the ITU will move forward with a public Enum service.

"It's going to take a long time for a global, public Enum service to be available," predicts Doug Ranalli, founder and chief strategy officer at start-up NetNumber of Lowell, Mass., which was the first company to offer Enum registrations. "But the enterprise space can move forward independent of that process . . . As enterprises move forward with converged network platforms, that represents an opportunity for Enum."

Three U.S. companies — NetNumber, VeriSign and NeuStar, the North American telephone numbering authority — are running Enum test beds. These test beds have attracted several hundred participants, including software and hardware developers and service providers.

The first Enum products are likely to be Internet-enabled telephones, PBXs and call managers. These products will be

See ENUM, page 62

Your Web site can thrive, even when the climate changes.

Just move to *Web Hosting Magazine's* "Best Solutions Hosting Provider." It's really getting rough out there. And you need to make sure your Web site is safe. Now's the time to move your business applications to AT&T's Internet Data Centers—a secure environment, connected to a powerful IP backbone. To make your transition seamless, here's what we provide:

- Ongoing Support: A dedicated management team, with 24/7 tech support
- Competitive Pricing: Tailored plans to keep costs down
- Hardware Trade-In and Rental: Available from AT&T's existing inventory
- Industry-Leading Service Level Agreements

For fully scalable, reliable and secure Web Hosting, bring your site to AT&T. Then sit back and watch it grow.

Respond by
November 1, 2001
for up to two months'
FREE Hosting.*

AT&T

For a smooth transition, call **1 866 387-9732**
or visit **www.att.com/business/hosting**

*Contract for AT&T Enterprise Hosting Services must be signed by December 31, 2001; monthly recurring charges only. Some restrictions apply. Web Hosting Magazine is a trademark of Infotonic, Inc.

ENUM
Continued from page 60

aimed at corporations rolling out private Enum services in conjunction with voice-over-IP applications.

"We are working with the equipment vendors to build our Enum service right into their applications, so when a service provider sells to a customer, [the customer's] address is populated in our Enum directory automatically," Ranalli says. "How you provision the directory and how you query the directory have to be embedded in the application."

Two gray areas for Enum are security and performance. IP telephony services need to be as secure and as fast as today's telephone services, vendors say.

"We take for granted when we make a telephone call that the caller is me and that no one else is listening in unless they have a search warrant," says Lori Whitted, vice president of business development for VeriSign Global Registry Services in Dulles, Va.

To achieve that, Enum service providers will need streamlined security mechanisms for checking the authentication of telephone numbers as well as speedy resolution. Hence, authentication vendor VeriSign's interest in the protocol. Rutkowski adds that some ideas for multitiered public Enum implementations would result in seconds-long delays and resolutions that are too slow for Internet users.

"We think there's an opportunity to make Enum more secure and faster than the technology that's here today," he says.

Enum meets SIP

Most Enum proponents predict the technology's initial use will be alongside another emerging IP telephony technology called Session Initiation Protocol (SIP). SIP is a signaling protocol used to establish Internet telephone calls, multimedia conferences, chat sessions and interactive communications.

"We think Enum is going to point to a SIP address and then an IP address," Rutkowski says.

The first SIP trials were held this summer. Most of the vendors announcing plans to support Enum already offer SIP.

Columbia University in New York is one of the first organizations to test how well SIP and Enum work together. So far, results are encouraging, says Henning Schulzrinne, associate professor of computer science.

Columbia is running a SIP test bed that supports voice communications, multimedia conferencing and unified messaging for 12 employees in its computer science department. Columbia added Enum support last spring using software from NetNumber. Enum handles the mapping between the telephone numbers active on the SIP test bed and the SIP URL used to handle calls.

Enum helps during the transition period from a traditional to an IP PBX, when some users are on each, Schulzrinne says. "You'd use Enum as the central database to keep track of whether a person has a traditional PBX number, in which case no translation is required, or a SIP URL that you'd use to route the call to an IP phone locally or off campus," he says.

He also sees a role for Enum in helping companies forward telephone calls for employees who move from one site to another.

"There's a way to do that by performing some PBX magic, but it's much easier with Enum," Schulzrinne says.

Outstanding issues

Although efforts such as the Columbia test indicate Enum technology is stable, vendors are trying to clarify implementation issues. One such issue is how Enum records, which show what Internet services are available for a particular telephone number, will be administered in the Internet.

"How do competing service providers provision Enum records into and out of an Enum database in a way that they trust each other?" asks Matt Wald, vice president of IP services at NeuStar of Washington, D.C.

Enum administration issues likewise need to be hashed out before services are introduced on the Internet.

NeuStar wants the U.S. government or an industry group to host a competitive procurement to select a Tier 1 Enum administrator for the U.S., and NeuStar hopes to win that procurement. The Tier 1 administrator would handle Enum transactions between service providers, while the service providers would offer Tier 2 registration services to U.S. companies.

Wald predicts the U.S. will have a public Enum Tier 1 central registry by the second half of next year.

From the enterprise perspective, all the application and service information will be held by the Tier 2 service provider.

"Tier 2 is where the action is . . . That's where AT&T's interest lies," says Steven Lind, standards strategy manager for international and IP numbering with AT&T Labs of Florham Park, N.J. AT&T is banking that most large companies would prefer to outsource Tier 2 Enum registrations.

Although these issues must be resolved for Enum to become the transparent megadirectory its proponents claim it will be, its progress is promising. ◪

Enum's ROI

Cheap and easy is the pitch.

Enum is not expected to add significantly to the cost of IP telephony products, with it likely being deployed as a software upgrade.

"With voice over IP, the whole value proposition is that you save money at the end of the day," says Lori Whitted, vice president of business development for VeriSign Global Registry Services of Dulles, Va. "It may be that your IP PBX costs a little more with Enum, but you should be getting a return on that investment."

WITH VOICE OVER IP, THE WHOLE VALUE PROPOSITION IS THAT YOU SAVE MONEY AT THE END OF THE DAY.

Lori Whitted, vice president of business development, VeriSign Global Registry Services

Alcatel plans to offer Enum support in its enterprise-class IP PBX as soon as service providers start supporting the technology, says Jim Pilgrim, an engineer with Alcatel. Alcatel's OmniPCX 4400 currently uses directory services based on Lightweight Directory Access Protocol (LDAP). Customers include Software AG, Computer Associates and Hyatt Hotels.

"We're working on alpha software that does the LDAP-to-Enum conversion," Pilgrim says, adding that he doubts Alcatel will charge an extra fee for that software.

Service providers expect to charge a nominal fee — estimates range from $6 to $10 per year — for each phone number registered in an Enum database. Usage of that Enum registration likely would be unlimited, but providers would charge extra for additions, changes and deletions to Enum registrations.

Even with such fees, users should come out ahead because of hassle-free voice-over-IP management, asserts Doug Ranalli, founder and chief strategy officer at Enum service provider NetNumber of Lowell, Mass.

Companies with multiple offices must often roll out multiple call managers to route calls, he says. Every time the company needs to make a change to an employee's telephone number or e-mail address, that change must be made on all the call managers. A shared, global directory — that is, an Enum service — streamlines this process, he says.

— Carolyn Duffy Marsan

WHAT TO ASK ENUM SERVICE PROVIDERS

- How often do you update your Enum directory?
- What fees do you charge for Enum registrations, additions, deletions and changes?
- What security mechanism does your Enum directory support?
- What protections do you offer against outsiders spamming your Enum directory?
- How are you designing your private Enum services to accommodate uncertainty about how a public Enum service will evolve?

AN AT&T BUSINESS SOLUTION

HIGH SPEED PACKET SERVICES. When record demand for office furniture boosted data traffic and internal applications requirements, Steelcase needed more power and flexibility from their existing network. So AT&T Business augmented it with Integrated Network Connection Service, which dynamically allocates bandwidth to voice and data applications. Now Steelcase has the networking power they need, where and when they need it. And they're saving money in the bargain. You could say that when it comes to networking, they're really sitting pretty.

AT&T

Find out how High Speed Packet Services can speed up your business.
Call 1 866 877-7115 or visit www.att.com/business/speed

from site to site, user to user and application to application.

"When a large corporation has hundreds of sites, all with specific security policies regarding what can go in and what can go out of them, how do we centrally manage and support that globally? That's the type of thing I wonder about," EMC's Chambers says.

He hopes a new version of Check Point Software's firewall and VPN software, dubbed NG for Next Generation, will help solve the problem. The bulk of changes to the Check Point software are geared toward easier management, such as automated software and policy updates configured at a central location. NG also centrally logs data from Check Point gear and third-party security tools, such as intrusion-detection systems. Vendors including Avaya, NetScreen and Lucent have similar management tools, and others say they are working on them.

Such tools will be important because the staff is required to distribute software to each desktop, administer and monitor a VPN add to the bottom-line cost, says Joel Snyder, a senior partner at OpusOne, a technology testing firm in Tucson, Ariz. and a *Network World* columnist. "Support kills you, as well as having to touch every desktop."

Savings can also be offset by factors such as the need for additional Internet-access bandwidth at major sites to accommodate the VPNs. And you can't take for granted that a VPN will always be less expensive than frame relay or leased lines.

On one hand, Choi says Hogan & Harston now pays just $5,500 for an E-1 Internet connection to an office in Warsaw, Poland, whereas the company previously paid $11,000 per month for an E-1 frame relay port with a guarantee of 128K bit/sec. Similarly, Divine saved $41,000 per month by migrating an 18-site frame relay network it inherited in an acquisition to a VPN, Horvat says. But Divine elected to stick with dedicated T-1 links to tie together four offices near Chicago because the T-1s cost just $500 per month. "Cost rules on this," he says.

A good response

Performance woes can likewise mitigate any cost savings. Users find the delay between sites on VPNs varies from 40 msec in the U.S. to 700 msec between Europe and the U.S. That's not necessarily bad, but not being able to accurately predict the delay can be crippling. For instance, Trimble uses a manufacturing and finance application that times out if the delay is too long. So the company monitored VPN performance carefully to ensure it would support the application. Frame relay lines that used to carry this traffic are used for backup and for packet voice trials, Forbes says.

Placing application servers regionally might solve the problem. If all of the traffic to a server is from nearby sites, the average VPN latency is low enough to give a response time as good as frame relay, Forbes says. "If you are trying to do it globally, your latency can get really, really nasty," he says.

Using only one service provider's network can likewise give good response times, but users would ideally like to get service-level guarantees for traffic that crosses multiple providers' networks. That will require providers adopting a standard such as Multi-protocol Label Switching (MPLS), an IP traffic shaping and signaling technology.

Major router vendors support it, but interoperability is still poor, and with service provider cutbacks, installing MPLS gear will be delayed until the economy improves, says Erin Dunne, an analyst with Vertical Systems Group. "The overwhelming majority of carriers have no plans to install MPLS because at

See IP VPN, page 68

Inline Protection that STOPS Denial of Service Attacks

in under a second.

Cyber vandalism and Denial of Service attacks are on the rise. Your corporate brand is under attack. Each day you face the problem of protecting your mission-critical networks. Each night you worry that your e-business might be the target of an attack.

Captus Networks has changed the way companies protect their brands, providing an inline solution that has allowed an entire industry to breathe a collective sigh of relief.

CaptIO™ network security devices automatically identify and immediately stop Denial of Service (DoS) and Distributed DoS (DDoS) attacks, originating from outside or inside a network, without disrupting legitimate traffic to your business. Plus, Captus Networks' new Traffic Limiting Intrusion Detection System (TLIDS™) provides the capability to distinguish between legitimate spikes in network traffic and malicious DoS attacks.

captus NETWORKS™
The Leader in Denial of Service Prevention

www.captusnetworks.com
© 2001 Captus Networks Corp.

Innovate.
Win.
Celebrate.
Succeed.

BEST OF
COMDEX
2001

SPONSORED BY:
CIO • COMPUTERWORLD • INFOWORLD
NETWORK WORLD • PC WORLD

Enter.

Have your new product chosen as "Best of COMDEX 2001" by award-winning editors of the IT industry's leading publications.

For more information or to enter, go online at www.comdex.com/bestofcomdex or call 781-433-1759.

2,000 COMPANIES 200,000 BUYERS 3,500 MEDIA

Key3 Media Group PRESENTS COMDEX

Best of COMDEX 2001 Awards November 14 Las Vegas

Copyright © 2001 Key3Media Events, Inc., 300 First Avenue, Needham, MA 02494-2722. All Rights Reserved. C001-9964 9/01
Key3Media, COMDEX, and associated design marks and logos are trademarks owned or used under license by Key3Media Events, Inc., and may be registered in the United States and other countries.
Other names mentioned may be trademarks of their respective owners.

IP VPN

Continued from page 66

this point their backbones are working," she says. "Or if they're planning it, they're talking late 2002 or early 2003."

Some carriers, such as AT&T and Equant, use MPLS in delivering services, but don't pass MPLS quality-of-service (QoS) data to other providers' networks. Other providers, including WorldCom, offer QoS on their own networks, but use technologies other than MPLS to support it, such as ATM and frame relay. A new provider, CoreExpress, has sprung up specifically to address this problem. Its U.S. network supplies an MPLS backbone that supports service-level guarantees. Customers use ISPs' access networks and link them via CoreExpress' MPLS network.

For users who run only IP-centric applications, current services should suffice in most cases, Dunne says. The exceptions are applications that are highly sensitive to latency — including voice, video and certain legacy applications.

Still, users are frustrated by service providers that can't offer meaningful service-level agreements (SLA). What they want is delay guarantees that are similar to those offered through frame relay services.

"[VPN] SLAs are not worth the paper they are written on," Forbes says. "There's just been too many times when the [promised performance] has been dramatically off. Plus some of them are hub-to-hub SLAs. That doesn't deal with any of the local-loop issues."

As a result, users such as Choi piece together services from different ISPs, depending on which seems best in a given region. "In Miami we use BellSouth, for example, because they get their pipes in a lot faster and provide us better bandwidth and a little bit better support," he says.

In addition to actual shortcomings users find with IP VPNs, there is also the perception among corporate bean counters that VPNs are not reliable. "Network engineers are more comfortable with it than business people are. A lot of my job is to work with the business people to explain the strengths and weaknesses," Horvat says.

While keeping those weaknesses in mind, remember also that as compared with dedicated lines, frame relay and ATM, IP VPNs are still in their infancy. If you're aware of the shortcomings, and use VPNs judiciously, you can reap the benefits that are to be had now and be well positioned for those to come.

As Forbes says, "As long as you're not dealing with traffic that is highly latency sensitive, I'd say pull the trigger, go for it, get into it." ◪

Why On-Site?

Why WANsuite®?

- Intelligent Frame Relay access
- Remote configuration via easy-to-use Web Browser
- Async and IP interface for RTUs (Remote Terminal Units)
- Up to four async data ports
- Combine RTU and enterprise traffic with one device
- Built-in TCP server converts async data to IP
- Policy based bandwidth shaping

Why Frame Relay?

- Line cost reduction by up to two-thirds that of analog or leased lines
- Redundancy/disaster recovery via alternate path routing
- More reliable than older analog services

WANsuite and SCADA give companies control over their systems

- Pinpoint problem areas without sending a technician
- Remotely troubleshoot network problems

VERILINK®

www.verilink.com
866.665.1515 / 256.327.2001

Verilink and WANsuite are registered trademarks of Verilink Corporation. © 2001 Verilink Corporation

Go Remote

Verilink's WANsuite® platform provides a myriad of features that enable extreme flexibility and protects customers' investments as they transition from older analog systems to emerging packet-based networks.

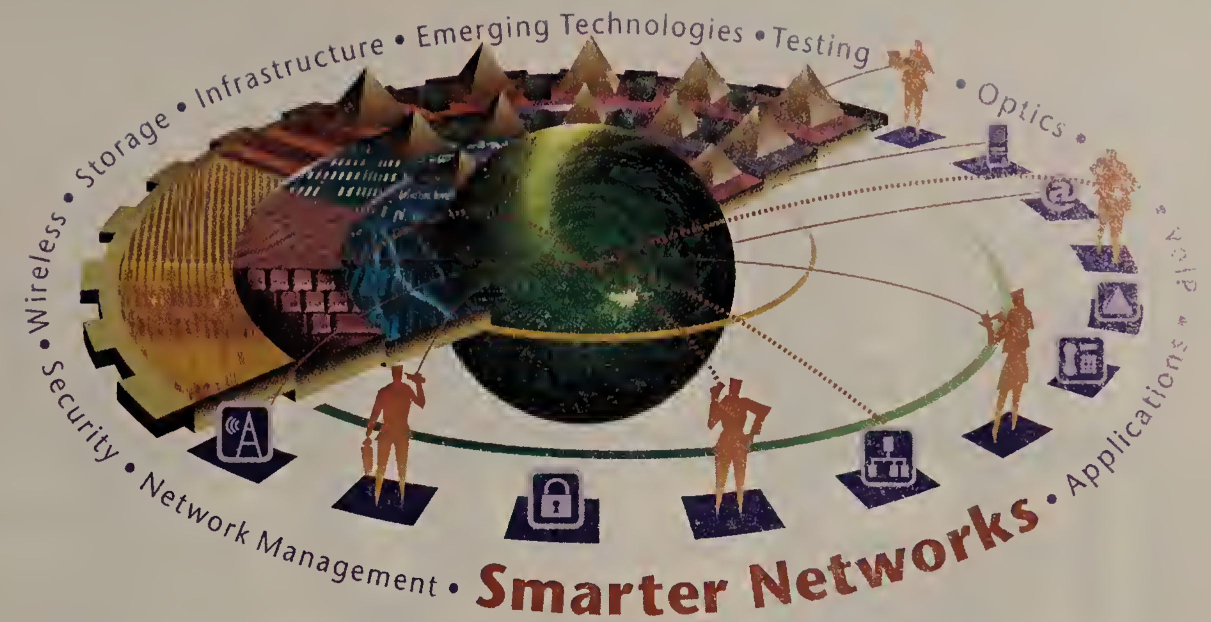
With the WANsuite 5339/5370 and 5160 providing intelligent Frame Relay access, you can not only support, but improve Supervisory Control and Data Acquisition (SCADA) applications. No need for expensive "truck rolls" — now you can remotely control your utility network from anywhere, anytime!

WHAT TO ASK IP VPN VENDORS

- Does your service-level agreement measure latency between my actual sites or just across your own network?
- Has your VPN gear proven to actually interoperate with equipment from other vendors, as opposed to merely being labeled "standards compliant"?
- Does your VPN management platform distribute centrally generated policies to remote VPN equipment to promote scalability?
- Will this VPN save money, even when factoring in maintenance costs and the need for additional bandwidth at hub sites?

COMNET®
CONFERENCE & EXPO

Washington Convention Center
Washington, D.C.
Conference: January 28-31, 2002
Expo: January 29-31, 2002


Infrastructure • Emerging Technologies • Testing • Optics • VoIP • Applications • Smarter Networks • Network Management • Security • Wireless • Storage •

The ultimate forum for learning and evaluating the newest networking and communications hardware, applications and strategies

This is your chance to benefit at COMNET 2002

- Gain insight on how smarter networks lead to flexible and seamless communication
- Hear the latest developments on integrating voice and data infrastructures to eliminate costly network redundancy
- Discover how outsourcing trends are redefining IT initiatives
- Capitalize on first-hand best practices of today's networking implementations
- View valuable hands-on demonstrations and testing labs from over 450 leading vendors
- Learn how to minimize IT costs and maximize your profits to gain a competitive edge
- Discover ways that networking and communication technologies can be used to your business' advantage

Keynotes:

Keynotes and Feature Presentations open to all attendees

Ivan G. Seidenberg
President and Co-CEO
Verizon

Patrick H. Nettles
Executive Chairman
CIENA

Wolfgang Kemna
Chief Executive Officer
SAP America, Inc.

Dr. Ian Foster
Head of the Distributed Systems Lab, Argonne National Labs and Professor of Computer Science, University of Chicago

Feature Presentations:

Network World's VPN Showdown

Host: John Gallant
President and Editorial Director
Network World

Town Meeting: RBOC Entry into Long Distance: Are the Floodgates Open?

Moderator: Richard Wiley
Senior Partner, Wiley, Rein & Fielding

New Features:

Enterprise Service Provider ESPWORLD

ENTERPRISE APPLICATION SUMMIT

NEW VENTURE ALLEY

COMNET Wireless Solutions Pavilion

NetworkWorld Miercom VoIP INTEROPERABILITY TESTING LAB

Owned and Managed By:
IDG WORLD EXPO

COMNET is a registered trademark of International Data Group, Inc.
© 2001 IDG World Expo. All rights reserved. All other marks contained herein are the property of their respective owners.

www.comnetexpo.com

FLAGSHIP SPONSOR
FLAGSHIP SPONSOR NetworkWorld

PLATINUM SPONSOR
MICROMUSE NETCOOL SOLUTIONS

GOLD SPONSOR
SONA OPTICAL WIRELESS

MEDIA SPONSORS
a-com
CommunicationsNews
FIBEROPTIC PRODUCT NEWS
INFORMATION SECURITY
InfoWorld
isit.com
sounding board
Software BUSINESS
XCHANGE

THE BUZZ ISSUE

EXECUTIVE FORUM Q&A

Bret Quance
Vice President, Business Development
BlueCat Networks, Inc.
(905) 415-2767
www.bluecatnetworks.com

Q: What do you think the trends will be within your own technology category in 2002?

A: The trend will be towards companies buying affordable dedicated appliances. BlueCat Networks is in the business of building and selling simple, affordable and secure dedicated network appliances. Our first product is a 1U appliance called the ADONIS Server — a simple DNS Appliance. A shameless plug, but with the Adonis, DNS can now be configured in a matter of minutes — that's high value.

Raghav "Reggie" Mehta
Sales Engineer
Network Technologies, Inc.
(800) 742-8324/(330) 562-7070
www.nti1.com

Q: What do you think the trends will be within your own technology category in 2002?

A: One trend is the growing popularity of USB-enhanced computers and peripherals. PCs, Macs and Sun computers are all available with USB connectors now; it's becoming the standard. NTI provides the KVM products network managers need, with the flexibility to control both legacy and USB computers and peripherals.

Roy Zisapel
President & CEO
Radware, Inc.
(888) 234-5763/(201) 512-9771
www.radware.com

Q: What differentiates Radware in the industry?

A: Radware is the only company completely focused on the gap between the network and application. We develop a traffic management switch that provides multiple network and application services such as load balancing, application security, health monitoring and bandwidth management to support mission critical applications. Our strong partnerships, as well as global presence has helped all types of companies assure certainty in their networks. And, the integration of our products is fast and simple providing an immediate ROI upon implementation.

For more Q&A, log on to
www.nwfusion.com

9/01—00634B—CP

All efforts have been made [illegible] listing as complete and accurate as possible. *Network World* is not liable for errors or omissions.

IN THE SPIN CYCLE

OPTICAL ETHERNET!
ENTERPRISE PORTALS!
STORAGE!
INFINIBAND!
PEER-TO-PEER!

HERE'S AN OVERVIEW OF FIVE MORE EMERGING TECHNOLOGIES WHIRLING TOWARD YOUR NETWORK. FOR AN IN-DEPTH ANALYSIS OF THE TOPICS SHOWCASED HERE, VISIT OUR BUZZ PORTAL AT WWW.NWFUSION.COM/BUZZ2001.

THE NEW ENTERPRISE PORTAL

PORTALS ARE PITCHED AS THE NEW UNIVERSAL FRONT ENDS. BUT A MAZE OF PRODUCT CHOICES COMPLICATES THE MARKET.

BY JENNIFER MEARS

The term "portal" denotes everything from a souped-up Web site to a turbocharged intranet. Add the word "enterprise" and the hype machine purrs even louder. More than 100 vendors are peddling enterprise portal software products, but analysts predict that fewer than a dozen will survive the mass consolidation currently taking place in the industry. The vendors wiped out are likely to be hawking products that are little more than a pretty intranet front end, with weak back-end integration abilities and uncertain security.

"Everyone is coming in these days and saying they have a portal version of their software," says portal user Dave Snyder, director of e-application services at Unisys, in Blue Bell, Pa. "You've really got to break it down and find out: Do they have a flexible front end, and do they have an architecture to bring in your back-end systems?"

Such integration is clearly the key to today's enterprise portal, which has become the front end from which users do everything from view legacy data to collaborate with colleagues. Companies that have successfully implemented such portals find them be the oil that keeps their businesses running as they throw more resources and applications onto their networks.

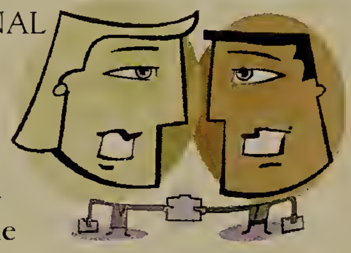
But massive consolidation and partnering in the industry has made a maze out of product choices. While portals have saved companies time and money, the wrong product will do neither.

Picked wisely, portal software will reduce network traffic by streamlining access to internal and external functions. Advanced features such as collaboration shouldn't create a bottleneck. Security and scalability are both issues; the former because a portal can be a single point of access to all sorts of back-end systems, the latter because proper placement of servers and load balancing needs grow as more resources are tied to this single front end. ***Find out how companies are using portals to save millions. Read the full story online at www.nwfusion.com/buzz2001, DocFinder: 6122.***

THE PROMISE AND PERIL OF P2P

SECURITY, SCALABILITY AND INTEGRATION CHALLENGES STAND IN THE WAY OF COLLABORATION AND CHEAP COMPUTATIONAL POWER.

BY ANN HARRISON



At the height of Napster's success, more than 70 million people worldwide had discovered peer-to-peer networking — transferring data without a server from one computer to another. The Napster buzz has come and gone, but peer-to-peer remains. Business users are exploring the technology to collaborate. Vendors are offering tools that let a group of users swap information in a shared virtual workspace, or pool spare computing power on networked PCs to tackle compute-intensive tasks.

The most interesting work is coming from companies developing frameworks for peer-to-peer applications, to create a standard, secure platform for corporate file-swapping. These include Groove Networks, Intel, Parabon Computation, IT Factory, Commerce One, World Street and Sun, with its JXTA initiative.

To be sure, there are issues for such vendors to address, such as security, says John Gravitt, an analyst at Solomon Smith Barney. Companies have to learn to trust enough to let each other see the other's information, he warns.

Nonetheless, some users see lots of promise in peer-to-peer.

Dean Pesnell, a scientist at NASA contractor Nomad Research in Bowie, Md., is testing Parabon's service. Parabon has a network of some 33,000 users, who either donate their machine time to Parabon clients or are offered incentives, such as cash sweepstakes, to do so. Parabon clients pay the company for access to its distributed network.

Pesnell uses the network to conduct quantum mechanical simulations, complex calculations that took six weeks on a NASA computer. The two simulations he's conducted on the Parabon network each took about an hour.

"I'm trying to get some interest [in Parabon] at NASA instead of buying a lot of computers you just have to replace next year," Pesnell says. ***Get the lowdown on peer-to-peer products. Read the full story online at www.nwfusion.com/buzz2001, DocFinder: 6123.***

INFINIBAND SET TO GIVE PCI THE BOOT

NEW I/O SPEC AIMS TO ALLEVIATE SERVER CONGESTION.

BY SANDRA GITTLEN

Call it the elixir for one of the last network bottlenecks. InfiniBand, the next evolution in PC I/O architecture, is poised to overthrow PCI. But despite growing credibility, the elixir's effects won't be immediately felt in the average enterprise PC server.

"InfiniBand's impact on PCI is going to be very large," says Arun Taneja, a senior analyst at Enterprise Storage Group. "PCI has shown no movement whatsoever in terms of getting wider and better and faster."

Born from two competing standards — Future I/O, developed by Compaq, IBM and Hewlett-Packard; and Next Generation I/O, developed by Intel, Dell, Microsoft and Sun — InfiniBand does away with PCI's shared bus approach. Instead, Version 1.0, released about a year ago, features a point-to-point switched fabric. It also promises scalability for relatively lower costs, Taneja says.

"With PCI, you have inches on a motherboard; InfiniBand gives you up to 17 meters with copper and up to 100 meters with optical. It allows you to get I/O out of the box," says Philip Brace, director of platform marketing at Intel.

InfiniBand comprises a host channel adapter that sits at the server and target channel adapters that are located in peripherals such as storage devices. The adapters communicate with each other so security and quality-of-service levels can be built in.

Offering throughput speeds of up to 2.5G byte/sec, InfiniBand is an incredible boost from today's PCI and PCI-X maximum of 1G byte/sec. Moreover, the specification outlines more than seven management functions.

Backers of the specification say products should hit the street by early 2002. Start-ups InfiniSwitch, InfiniCon Systems and Paceline are currently working on switch products. Meanwhile, companies such as Lane 15 and Vieo are creating management software.

Already, vendors are testing prototypes in Intel's InfiniBand interoperability lab. Initial products will likely be aimed at huge server farms, particularly for clustered servers and storage.

Some network managers say InfiniBand could be just the cure for what's ailing them. "We'll most realize [the power of InfiniBand] in the speed of our peripherals," says Tom Gonzales, senior network administrator at the Colorado State Employees Credit Union, Denver. He says he's looking forward to new devices that could take advantage of InfiniBand, such as external security devices. ***For insight into InfiniBand management, read the full story online at www.nwfusion.com/buzz2001, DocFinder: 6124.***

SHEDDING LIGHT ON OPTICAL ETHERNET

ETHERNET IN THE MAN SHOWS GREAT PROMISE, BUT LEGACY SONET EQUIPMENT REMAINS A BARRIER.

BY KIMBERLY CAISSE

Ethernet is storming the metropolitan-area network, promising to save users money while improving reliability and provisioning. But a decade of legacy SONET bars the way.

Known as Optical Ethernet or Gig E, the buzz centers around service provider start-ups such as Yipes Communications, Cogent Communications and Telseon Service (www.nwfusion.com, DocFinder: 6128).

Early adopters say a 10M bit/sec Ethernet MAN link can be more reliable than a tapped-out T-1 line and about half the cost.

Last summer, Swarthmore College in Pennsylvania found that bids for similar amounts of bandwidth (10M bit/sec), were double the price of Yipes, says Mark Dumic, manager of networking and telecommunications.

Likewise, Matt Kesner, CIO of law firm Fenwick & West, is paying less than $6,000 per month for 10M Yipes' Ethernet MAN service. This is compared with bids of $18,000 or more per month from local and national carriers for traditional private line service. Users also say they can increase or decrease bandwidth at 1M bit/sec increments within hours of notifying their providers.

But the start-ups only operate in about the top 20 U.S. cities. So Ethernet will not be widely available until incumbent local exchange carriers (ILEC) offer it, which won't happen until their legacy SONET equipment is upgraded.

Traditional SONET can take months to provision. Giving a customer more capacity often means upgrading the entire SONET ring or installing an overlay ring, then manually provisioning new time division multiplexing (TDM) circuits.

Optical edge devices could help. One type of product, called multiservice equipment, combines the TDM for private-line service with other emerging MAN capabilities, including wavelength division multiplexing (WDM). These boxes can have switching or routing capability, and many have Ethernet interfaces.

The other product group, "super SONET" gear, improves on the conventional SONET multiplexer. It can scale up to 10G, link to metropolitan WDM boxes and support Ethernet.

ILECs can drop these edge devices into their existing backbones without a major network overhaul.

Still, analysts don't expect many ILECs to offer Ethernet MAN services en masse until start-ups peel away their customers. ***To discover what early adopters say about Gig E, read the full story online at www.nwfusion.com/buzz2001, DocFinder: 6126.***

STORAGE ON STEROIDS

OFF-LOADING TCP/IP PROCESSING BOOSTS SPEED BY TAKING THE SERVER OUT OF THE STORAGE MIX.

BY DENI CONNOR

As Gigabit Ethernet use grows, users are pushing TCP/IP data across their networks ever faster. But servers are choking on the load, unable to conduct TCP/IP processing quickly enough to keep up.

Enter TCP Offload Engines (TOE). TOE technology aims to relieve the server CPU from the I/O tasks associated with data transfers between the disk drive and requesting devices, shifting them to the network adapter or storage device.

"TCP/IP processing can boost CPU utilization by as much as 50%," says Costa Sazunptzakis, a designer at Cisco, one of the companies involved in finding a fix for overloaded CPUs.

The need for TOE has become more urgent with the advent of iSCSI, a pending standard that proposes the transport of block-oriented storage data over Gigabit Ethernet networks. Once companies start to aggregate multigigabit links, even a server CPU running at 1 GHz or higher has no chance of keeping up with demands for data.

"TCP is required to guarantee sequence and deal with faults, two things block-oriented storage absolutely requires," says Steve Duplessie, an analyst with Enterprise Storage Group. "Running TCP on the server will cripple the server eventually — so bringing the function into hardware is a must."

Companies including Adaptec, Emulex, Pirus and Surgient Networks are at work on various types of storage products, from controllers to switches, that support TOE. Trebia Networks, a start-up in Acton, Mass., makes silicon that will let these controllers work. Duplessie expects to see the first products this year.

From the user perspective, there's nothing not to like about TOE.

"Anything that optimizes the price/performance of the overall system for our clients is a good thing," says Michael Carrier, CTO and founder of infrastructure management company Totality. "This is just like miles per gallon on your car. Anything that helps us get 95 miles per gallon instead of 25, we're interested in." ***For a list of vendors and their TOE products, read the full story online at www.nwfusion.com/buzz2001, DocFinder: 6125.***

ONLINE! Attend *Network World's* Emerging Technologies conference. Register online at DocFinder: 6135.

www.nwfusion.com/buzz2001

THE BUZZ ISSUE

EXECUTIVE FORUM Q&A

Jim Davis
President
Silas Technologies
(877) 897-2579
www.silasreveille.com

Q: What do you think the trends will be within your own technology category in 2002?

A: How to do more with less. How to handle increasingly complex and diverse business environments, without killing the company's bottom line. With this focus on revenue, the trend will be to find ways of minimizing operating expenses without sacrificing service.

James Cameron
President & CEO
WebEvent, Inc.
(978) 975-3344
www.WebEvent.com

Q: What do you think the trends will be within your own technology category in 2002?

A: The calendaring and scheduling market will evolve to enable people to effortlessly schedule time with one another, even across organizational boundaries. Embedded "smart agents" will simplify time management and new technologies will transparently combine multiple sources of event information into a single, cohesive scheduling solution.

Andy Meyer
Vice President, Marketing
Websense, Inc.
(800) 723-1166
www.websense.com

Q: What do you think the trends will be within your own technology category in 2002?

A: As new technologies evolve and more employees gain access to the Internet, employee Internet management (EIM) solutions will become increasingly essential for companies to install. EIM software will become a must-have to alleviate unnecessary network bandwidth and productivity loss, storage costs and exposure to legal liabilities.

For more Q&A, log on to
www.nwfusion.com

[illegible] as co[illegible]d accur[illegible] possible. *N[illegible]ork World* is not liable for errors or omissions.

The Buzz Issue SIGN-OFF

BY JOHN GALLANT

SILENT BUZZ, SECRET BUZZ

THIS WINTRY ECONOMY IS ONLY A FACADE.

Remember the Conrad Aiken short story "Silent Snow, Secret Snow"? In it, an emotionally troubled boy retreats into the enveloping whiteness of his imaginary snowfall. Cut off from the world, wrapped in a delicious blanket of snow that silences the harsh noises and reality, he can drift off to sleep and forget the world.

You may be feeling the same way today.

In the wake of the terrorist attacks in New York, Washington, D.C., and Pennsylvania, your mind reels and longs for some quiet. The crisis threatens to disrupt even further the economy, which was already gyrating, and it's battering a stock market already beaten down hard from the death of dot-coms and competitive local exchange carriers.

Layoffs. Bankruptcies. Shutdowns. The snow falls thick and heavy on the technology world, which only recently basked in the red-hot glow of its own revolutionary fervor. The snowflakes pile up on empty office buildings in Silicon Valley, Silicon Gulch in Austin, Texas, and other regions with their silly, knock-off "Silicon-something-or-other" monikers (Silicon Sandbar for Cape Cod?).

In the quiet, as the drifts rise, you might want to ease up — just take it slow for a while. Sure, you're probably working just as many hours — maybe more, if you can't fill those open job reqs. But the corporate muckety mucks aren't spouting the e-everything nonsense they picked up last year in *Forbes* or *Fortune*. They're not blathering on so much about transforming the company into a Web-telligent powerhouse that seamlessly interconnects with customers and suppliers, and can turn on a market dime. Your budget has been pared down. New projects get harder and harder to approve.

So you can pace yourself. Relax. Sleep.

NO! Snap out of it! Wake up! (Slap! Slap!)

Ignore the urge to curl up in the powder. Don't you remember what happens in the movies? The lost pioneer lays down and fades off, while a mere 100 yards away, a snug little cabin beckons, with a fire blazing on the hearth and stew boiling in the pot.

Just beyond you — maybe three months out, maybe a year — is an economic turnaround. We'll get through all of this, no matter how bad it seems. In the grand sweep of the business world and your career as a network professional, this wintry period will be nothing but a blip, a pothole in the road — bigger or smaller depending on the particular industry with which you are associated.

Nothing's really changed. The demands on your network and your applications will only grow. The threats to your security get scarier and scarier. Workers will become more mobile and tech-savvy. If you slow down — or sleep — during this slowdown, you will be left behind by rivals who keep moving.

Case in point: mobility. In this one area, there are incredible developments to digest — from 3G and 2.5G wireless services to 802.11a and b wireless LANs, not to mention myriad tools and technologies for handheld-enabling your applications and securing your airborne data. As with e-business, mobility presents an amazing opportunity for you to help your company conduct business better and smarter — to really link IT and business goals. Developing expertise in this arena, you can envision and champion new services and applications.

Yes, our minds are elsewhere right now. But don't let the bad news drown out the buzz of new ideas. The network world continues to change at a rapid clip. There are innovative technologies and new buzzwords to sort out, emerging opportunities to dissect, start-up companies with new products and services that you need to understand. That's what the Buzz Issue is for — to keep you alert, awake and prepared for anything. Consider it a hot cup of knowledge java that fights off the biting cold. For another blast, make plans to attend our Emerging Technologies conference this fall. There, you'll hear the latest on the hottest technologies from experts in the field. You can find out more at www.nwfusion.com, DocFinder: 6135.

Don't be hypnotized by the snowflakes fluttering down in the chilly air. We've got to stay sharp! ◪

ONLINE! **Laugh with us via the Press Release Generator: You'll create your own company, complete with a state-of-the-art buzzword product. (DocFinder: 6134).**

www.nwfusion.com/buzz2001

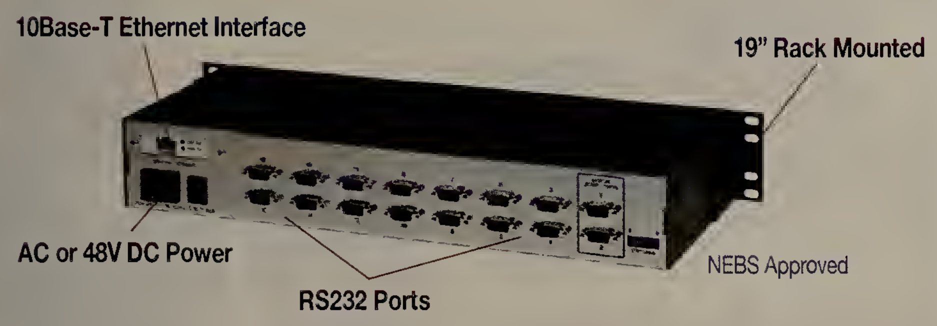
Remote Network Management Solutions

Access Your Network Equipment From Anywhere!

When it comes to Remote Site Management, no one offers more choices to remotely access multiple console ports and/or reboot power than Western Telematic. Our Remote Management Hardware offers the design flexibility you need to mix and match equipment for small or large scale remote management strategies. As the pioneer and leader in Remote Site Management, WTI products are now installed in thousands of network sites world wide. Our customers know they can depend on our superior quality, reliability, and delivery for their mission-critical operations.

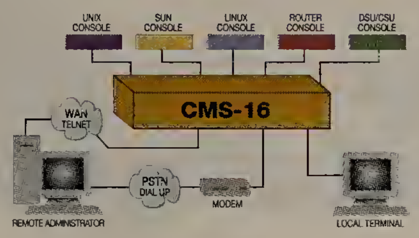
Telnet and Dial-Up Console/AUX Port Switch

Cost Effective Terminal Server Alternative



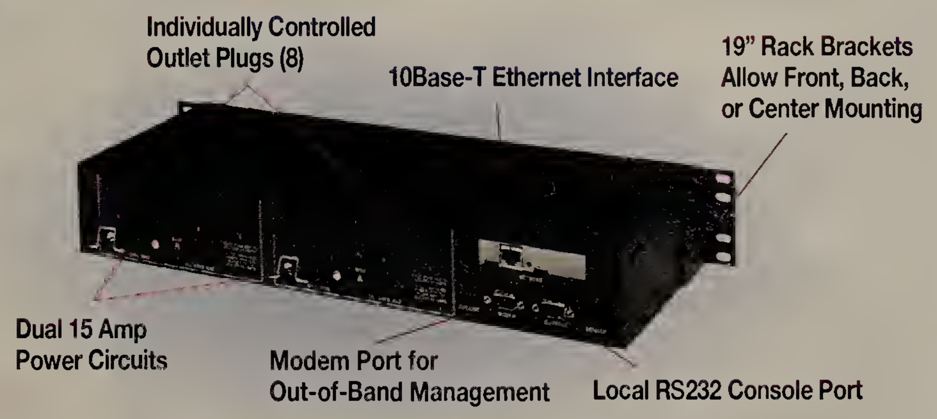
Console Management Switch (CMS)

- 8 or 16 RS232 DB-9 Serial Ports
- Simultaneous Telnet Sessions
- Modem Auto-Setup Command Strings (User Definable)
- IP Security Features
- Non-Connect Port Buffering



Telnet and Dial-Up Network Power Switch

Reboot Locked-up Equipment

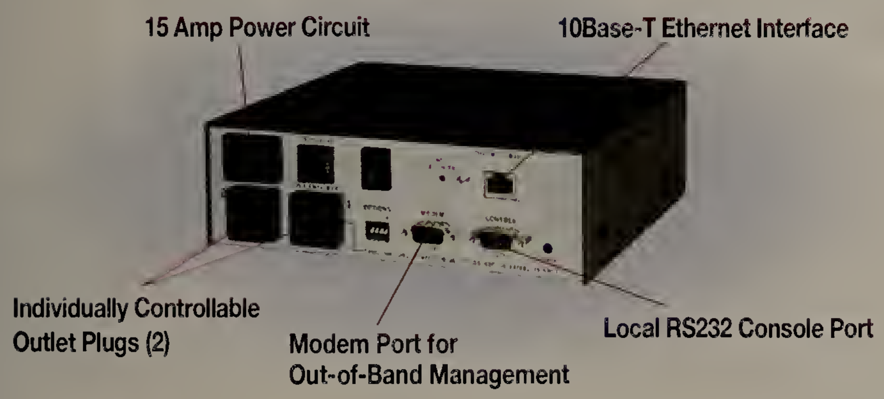

Individually Controlled Outlet Plugs (8)
10Base-T Ethernet Interface
19" Rack Brackets Allow Front, Back, or Center Mounting
Dual 15 Amp Power Circuits
Modem Port for Out-of-Band Management
Local RS232 Console Port

Network Power Switch (NPS)

- 8 Individual Outlets
- On/Off/Reboot Switching
- Integral 10Base-T Interface
- Co-Location Features
- Outlet-Specific Password Security
- Network Security Features
- 115-VAC (230-VAC available)
- Power-Up Sequencing

Telnet and Dial-Up AC Power Switch

Economical

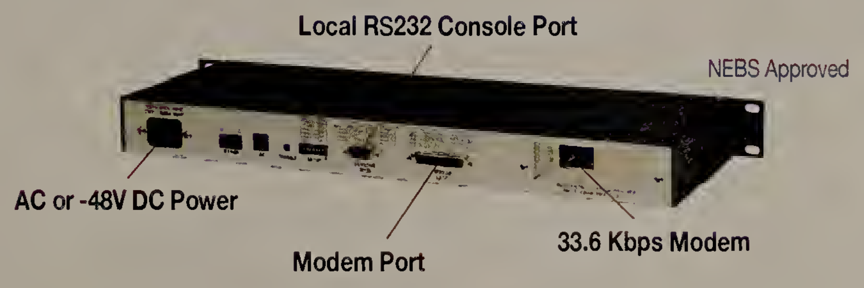

15 Amp Power Circuit
10Base-T Ethernet Interface
Individually Controllable Outlet Plugs (2)
Modem Port for Out-of-Band Management
Local RS232 Console Port

Telnet Power Switch (TPS)

- 2 Individual Outlets
- On/Off/Reboot Switching
- Outlet-Specific Password Security
- Network Security Features
- Manual On/Off Buttons
- Switches 15-Amp Load

Secure Modem for Remote Dial-Up Management

Dial-up Access to Equipment Bays



Secure Rack Modem (SRM)

- Up to 100 Individual Passwords
- Audit Trail Log With Time/Date Stamp
- Powers up to Specified Answer Rings and Baud Rate
- Remotely Configurable
- AC and -48V DC Power Options
- Standard "AT" 33.6 Kbps Modem

Visit Our Website For The Complete NetReach™ Product Line

www.wti.com

wti

(800) 854-7226

western telematic incorporated
5 Sterling • Irvine • California • 92618-2517

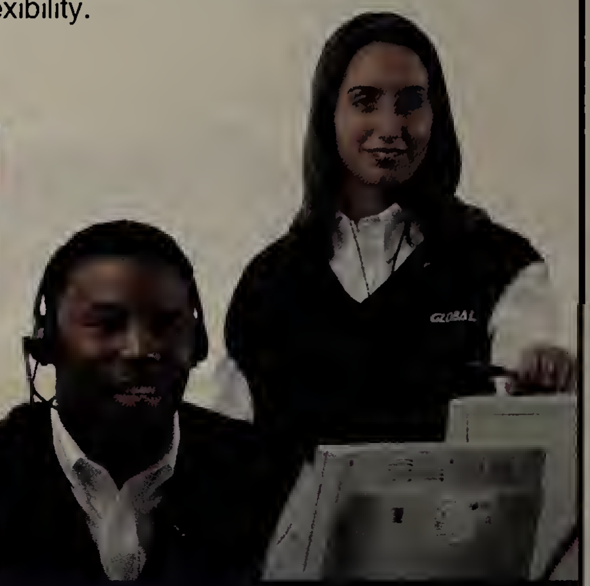
Keeping the Net...Working!

Your network costs a fortune...

as low as $999

Global LAN Workstations protect your equipment for a lot less money.

Our heavy-duty LAN Stations are built to last with steel-reinforced, triple-leg support and lateral braces. Extra-wide 30" work surface, built-in cable management system, adjustable shelves and sturdy server shelf allow for easy integration of all your network equipment. Our 96", 72", 48" and 24" wide units connect easily with an affordable joining kit for unmatched flexibility.



Networking Specialists

Our Specialized Networking Team is ready to customize a solution for you. Call for a free catalog!

1-800-830-3121

GLOBAL COMPUTER SUPPLIES
www.globalcomputer.com/lan/
SYX Listed NYSE

...protecting it doesn't have to.

NW-0910

ENCLOSURES & RACKS

The premiere designer and manufacturer of modular ergonomic computer support furniture, enclosures & cabinets.

Racking Systems • Enclosures • 19" Rackmount • Relay Racks • Personal Workstations • KVM

2-61 Borden Ave. L.I.C, NY 11101
www.hergo.com

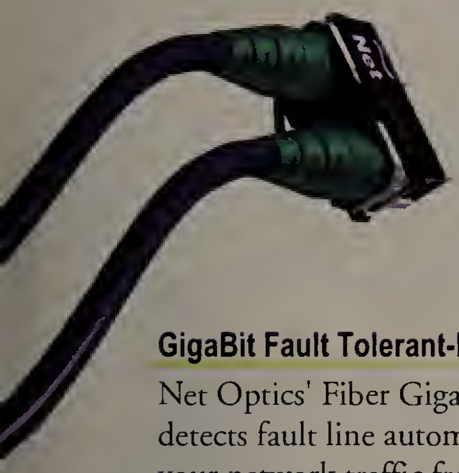
© 2001 Hergo Ergonomic Support Systems, Inc. Actual products may vary from illustrations.

Fax: 888.410.0671

hergo toll-free 888.222.7270

An Important Part Of The Network

Whats New? | Taps, Splitters | Fiberoptic Attenuators | Converters | Cable Assemblies | Bypass Switch | Simulation Test Box | LAN Equipment | Test Equipment



Tap into your NETWORK

GigaBit Fault Tolerant-Redundant Security Port Selector

Net Optics' Fiber GigaBit Fault Tolerant Port Selector detects fault line automatically to prevent your network traffic from stopping. This product is a MUST for ISP centers, and central offices with critical data. Works well with all GigaBit Servers, Switches brand names.

Network Redundancy!

Secure your NETWORK

↪ visit: www.netoptics.com/net-96260.html

GigaBit Copper to SX, LX or ZX Fiber Converters

Net Optics' Gigabit Copper to Fiber Converter allows network managers to migrate to GigaBit Ethernet in a cost-effective manner. Simply plug-in the Cables.

Unbeatable!

↪ visit: www.netoptics.com/sx-tx-converter.html

GigaBit ZX, LX to SX Media Converter

Net Optics' Fiber Optic Mode Converter is used to connect two devices operating with GigaBit multimode LX fiber to SX fiber. The fiber converter provides transparent conversion of optical signals.

Beyond The Box!

↪ visit: www.netoptics.com/converter-gig.html

Fiberoptics Cable Assemblies

The Net Optics' total solutions approach can provide you with any type of fiberoptic cable assembly you need, from LC, MTRJ, SC, MIC, FC or Escon patch cords for your ATM, Gigabit and any other network.

Also available:
LC, SC, MT-RJ fiberoptic Loopbacks.
↪ visit: www.netoptics.com/2.html

Loops!

Network Monitoring Accessories

In some countries ISP's must be TAPable... is the new Law!

GigaBit SX, LX or ZX, ATM, DS3, T1, Copper and Fiber Taps

These Splitter Taps have capabilities that will allow the networks to operate at a continuous flow while the tap is non-operational, thus maintaining network integrity. This enables you to monitor the network without disconnecting any one link!

The Fiber Splitter Tap has passive-link integrity that is maintained whether the device is on or off.

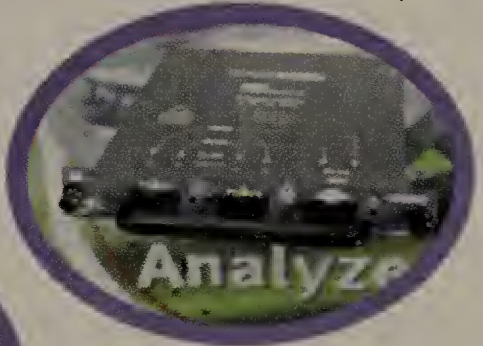
Copper Gigabit to Fiber Taps feature two Power Supplies which are load sharing. If either unit fails, the remaining power supply comes up to full power and takes over the additional load.

Compatible with all analyzer manufacturers including: Network Associates' Sniffer®, Agilent's Internet Advisor and Cisco's SwitchProbe products.

↪ visit: www.netoptics.com/11.html

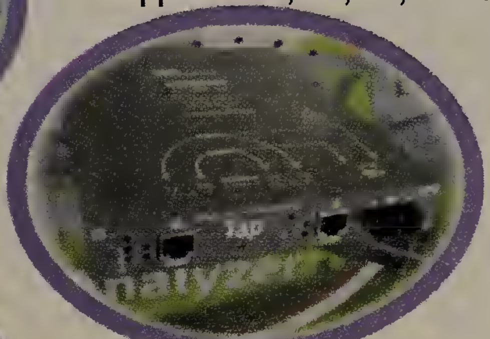
Net Optics' GigaBit TX to SX Tap is the market's first copper to fiber tap!

Intrusion Detection

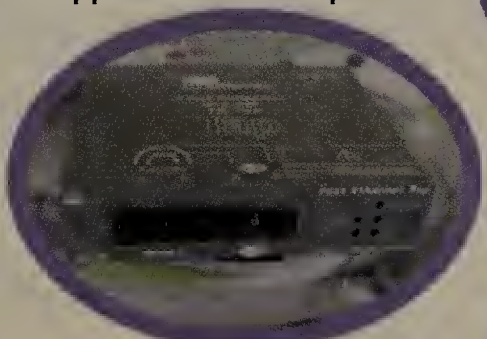


Fiber LX to SX, ZX Tap

GigaBit Fiber Tap



Copper to FX, SX, LX, ZX Tap



Copper 100BaseT Tap

6 Station Tap

Troubleshoot NETWORK Problems

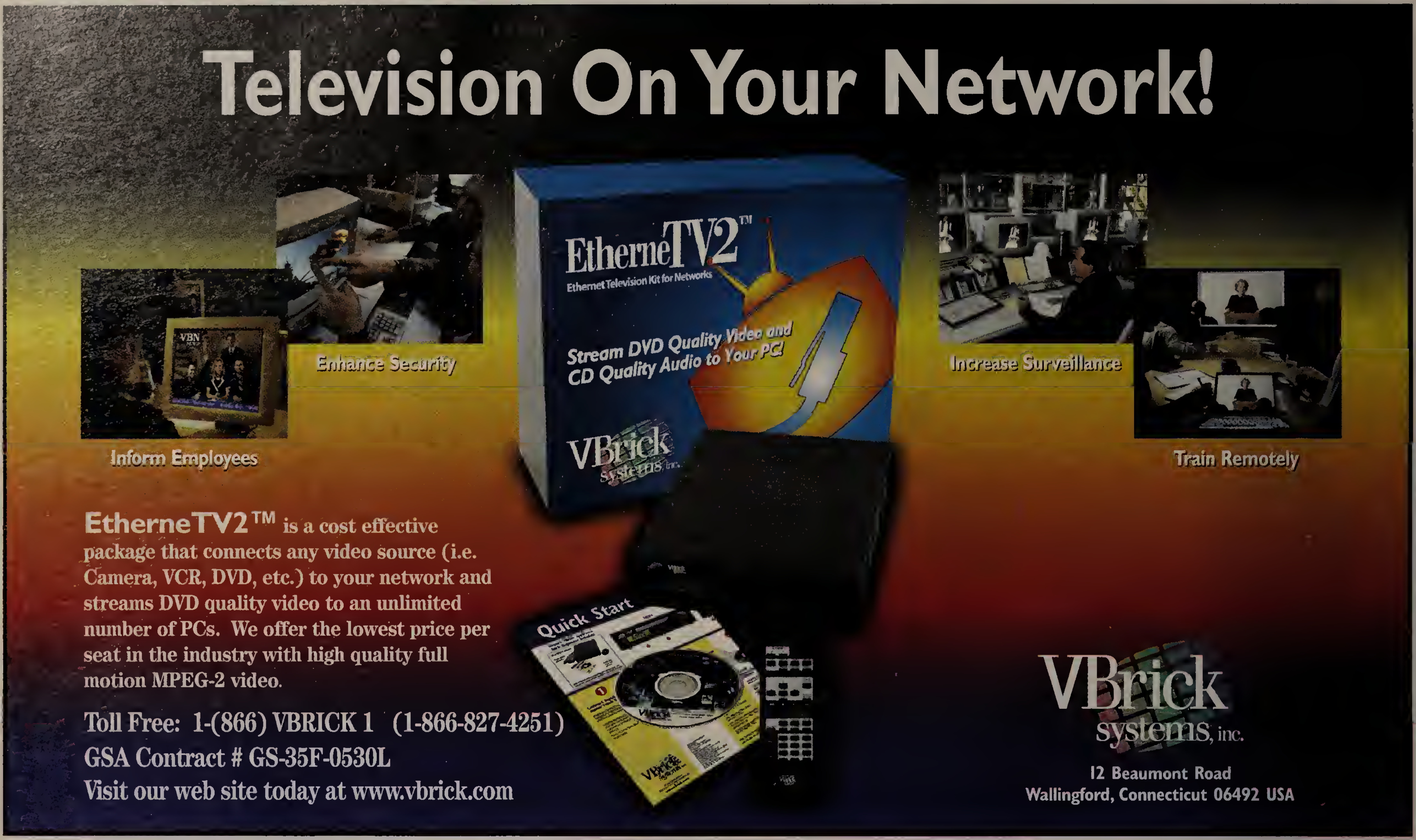
Tap Diagnostic Capabilities

Net Optics™
www.netoptics.com

Bright ideas... Built for speed!

Note: Sniffer® is a registered trademark of Network Associates Inc

Net Optics, Inc. • 1230-A Old Mountain View-Alviso Road • Sunnyvale, CA 94089-2237 • USA Tel: +1 (408)737-7777 • Fax: +1(408)745-7719 • world@netoptics.com

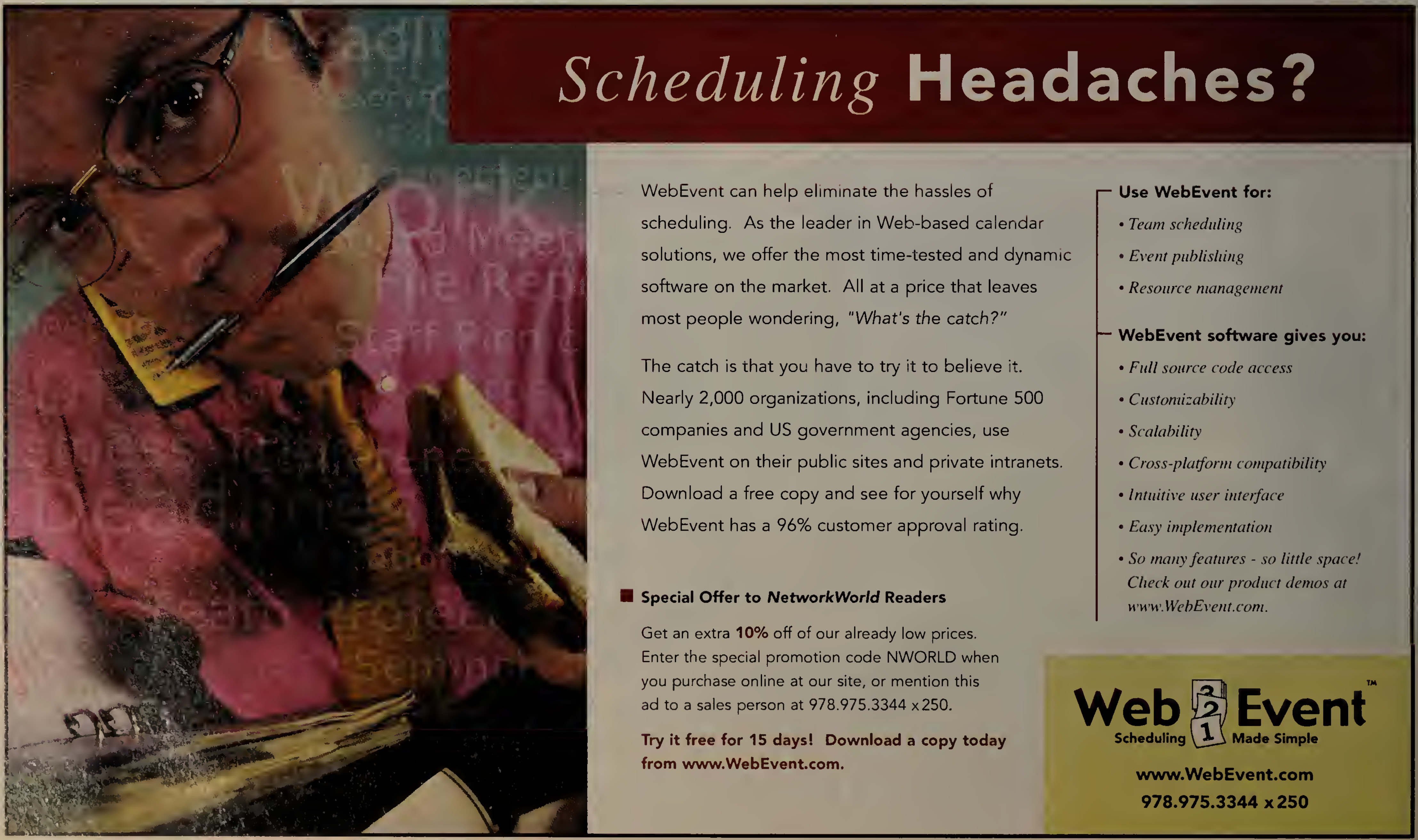


Television On Your Network!

EtherneTV2™ is a cost effective package that connects any video source (i.e. Camera, VCR, DVD, etc.) to your network and streams DVD quality video to an unlimited number of PCs. We offer the lowest price per seat in the industry with high quality full motion MPEG-2 video.

Toll Free: 1-(866) VBRICK 1 (1-866-827-4251)
GSA Contract # GS-35F-0530L
Visit our web site today at www.vbrick.com

VBrick systems, inc.
12 Beaumont Road
Wallingford, Connecticut 06492 USA



Scheduling Headaches?

WebEvent can help eliminate the hassles of scheduling. As the leader in Web-based calendar solutions, we offer the most time-tested and dynamic software on the market. All at a price that leaves most people wondering, *"What's the catch?"*

The catch is that you have to try it to believe it. Nearly 2,000 organizations, including Fortune 500 companies and US government agencies, use WebEvent on their public sites and private intranets. Download a free copy and see for yourself why WebEvent has a 96% customer approval rating.

Use WebEvent for:

- *Team scheduling*
- *Event publishing*
- *Resource management*

WebEvent software gives you:

- *Full source code access*
- *Customizability*
- *Scalability*
- *Cross-platform compatibility*
- *Intuitive user interface*
- *Easy implementation*
- *So many features - so little space! Check out our product demos at www.WebEvent.com.*

Special Offer to *NetworkWorld* Readers

Get an extra **10%** off of our already low prices. Enter the special promotion code NWORLD when you purchase online at our site, or mention this ad to a sales person at 978.975.3344 x 250.

Try it free for 15 days! Download a copy today from www.WebEvent.com.

Web Event™
Scheduling Made Simple
www.WebEvent.com
978.975.3344 x 250

GET A FREE Subscription!

The leader in network knowledge

NetworkWorld

Apply on-line today at:
www.nwwsubscribe.com/pb901

Change of Address?

Keep NetworkWorld Coming!

Inform us immediately at
www.nwwsubscribe.com

NetworkWorld

NetSmart SM

The Premier Source for IT Learning

www.nwnetsmart.com

Access Easily & Quickly :

- Onsite Training
- Leading IT Books
- IT Certification Programs
- Free IT Education & Training Newsletter

Get A FREE

The leader in network knowledge

NetworkWorld

Subscription!

NetworkWorld

Key DSL flavor faces big compatibility test

POLICING POLLUTION

Start-ups aim to change how hardware is built

APPLY ON-LINE TODAY AT:

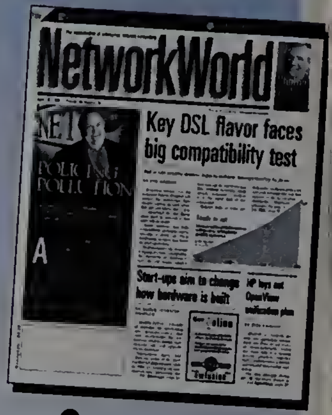
www.nwwsubscribe.com/pb901

Get A FREE

The leader in network knowledge

NetworkWorld

Subscription!



NetworkWorld

Key DSL flavor faces big compatibility test

Start-ups aim to change how hardware is built

APPLY ON-LINE TODAY AT:

www.nwwsubscribe.com/pb901

Introducing...

NetworkWorld

NetSmart SM

The Premier Source for IT Learning

www.nwnetsmart.com

An IT Learning center created just for you!

Configure your DNS in Minutes

It's Time
for the
aDoNiS™
Server

The Adonis Server™ is a dedicated DNS appliance that integrates powerful Java® technology into a simple, easy to use and cost effective network solution.

BLUECAT™ NETWORKS
www.bluecatnetworks.com

simple . secure . affordable

BlueCat Networks name, design and related marks are trademarks of BlueCat Networks.
© 2001 All Rights Reserved. Java® is a trademark of Sun Microsystems, Inc.

Take KVM Switching to a Higher Level!

AutoView and OutLook
Unrivaled KVM Access and Control

Looking for greater access to more servers? Need the flexibility to handle multiple platforms or users? **Step up to Avocent KVM switches.**

Our AutoView series controls up to 24 multi-platform servers as far as 500 feet away. Choose an Avocent OutLook switch for true mult-user access to your rack-mounted servers. Both switches are expandable, designed to keep pace with your growing data center.

Find out what the world's leading technology companies and server manufacturers already know, and take **your** switching to a higher level.

ADVANCED KVM SWITCHES

	Users	*Ports*	*Platforms*	*Key Features*
AutoView 200	1 local, 1 extended	4,8	PC	All models are rack mountable, flash upgradeable and expandable with built-in on screen display.
AutoView 400	1 local, 1 extended	8,16,24	PC, USB, Sun	
OutLook 2160ES	2	16	PC	
OutLook 4160ES	4	16	PC	

Go to www.avocent.com or call 1-866-AVOCENT (286-2368) and get your free KVM buyers guide today

Avocent™
The Power of Being There™

Avocent, the Avocent logo and 'The Power of Being There' are trademarks of Avocent Corporation. Cybex and AutoView are registered trademarks of Cybex Computer Products Corporation. Apex and OutLook are registered trademarks of Apex Inc. All other marks are the property of their respective owners. © 2001 Avocent Corporation.

Are You Securing Sneakers?

Or Mission Critical Servers?

Welcome to Real World Security.

The SmartCabinet I™ from SMC® provides keyless access control that can tie into existing network management systems.

- Remote monitoring and log of personnel access of each door
- Provides notification of breach in security
- Ensures all door latches are correctly closed
- Web based access to manage security and temperature in server cabinets remotely from anywhere in the world

For more information visit our website at www.smcplus.com or call 1-800-SMC-PLUS

SMC®
A Wholly Owned Subsidiary
of Fisher Hamilton LLC.

100 Progress Parkway • P.O. Box 431 • Conklin, New York 13748
Toll Free: 1-800-SMC-PLUS (762-7587) • E-mail: info@smcplus.com

Video Security Management for NETWORKS!

PC based Video Surveillance System

Live Video from any workstation

Record 64 video cameras digitally

Video archived in MS Access™ format!

ECHO DMX™ for Windows 98® and Windows 2000®

ECHO DMX is a Trademark of Anderson Communications Inc.
Windows is a Registered Trademark of Microsoft Corporation

ACI International Inc.
www.aciconnect.com Toll free (800) 267-2288
Phone (905) 660-4460 Fax (905) 660-7544

Successful teamwork...
gets you to market faster.

www.sbs.com

Let SBS be your preferred partner. Leverage SBS' proven technology, innovative products and dedicated support to create fully integrated standard and custom OEM solutions for a variety of communication networking applications. Team with SBS to speed up time to market, optimize scarce engineering resources and meet price/performance requirements. For more information, contact SBS at (888) SBS-COMM.

OS SUPPORT: Windows NT, VxWorks, Linux, DDK
PROTOCOL SUPPORT: Frame Relay, HDLC, PPP, ATM, SS7

SBS Technologies
embedded computing preferred...

California • Massachusetts • Minnesota
New Mexico • North Carolina • Wisconsin • Germany

All logos & trademarks are property of their respective owners

The Ultimate Power Strip.

NEW!

IPC 34XX-NET Intelligent Power Control™

Remote Reboot Via:

- RS232: Direct & Dial-Up
- Ethernet & TCP/IP
- Strap Up To 10 IPCs To Control 80 Outlets

See Us At
NETWORLD
+INTEROP
2001 Atlanta

Exclusive Features:

- Sequence power up/down
- Local control of each outlet
- 20A/85-264V~ input
- IEC60950 C13 Outlet Version Available
- Branch circuit protection
- 16 gauge steel construction
- Cross platform compatible
- Remote access disable

Z-LINE

PULIZZI®
ENGINEERING INC.
3200 S. Susan St., Santa Ana, CA 92704-6865
www.pulizzi.com/ipc **E-mail: sales@pulizzi.com**
Call Today! 1-877-PULIZZI (785-4994)

Paragon®

KVM Access Over IP

plus

[illegible]vers.
3040 Miles Away.

2 Under Par.

Life is good... with Paragon, the highly acclaimed, multi-user, multi-platform KVM switch that uses Raritan's advanced Cat5 transmission technology for access to hundreds, even thousands of servers up to 1,000 feet away. What could be better? Paragon power, over IP.

Paragon® + TeleReach™ Enterprise-class KVM technology, plus the fastest, most reliable and secure way to gain remote IP access to multiple servers — no matter where you are, or where your servers are located. Manage your servers from anywhere via the Internet, LAN/WAN or dial-up modem. Maintain, administer and troubleshoot, even down to BIOS-level. And Raritan's unique Video Compression Algorithm and industry-standard 128 bit SSL encryption ensure speedy and secure data transfer, even over modem or slow Internet connection.

Paragon + TeleReach Winner of Network Computing's prestigious Editor's Choice. The complete, hassle-free, server management solution. **Anywhere. Anytime.**

Raritan.
www.raritan.com

800-724-8090

Raritan and Paragon are registered trademarks of Raritan Computer, Inc.

TELECOM BUSINESS WORLD™
Advancing the Business of Telecom
October 10-12, 2001
New York, NY
Booth #1515

There is a better way to **secure** your wireless LAN!

Colubris Networks' CN1000 Family of Wireless LAN Routers with integrated **IPSec** & **L2TP**.

colubrisnetworks.com
keyword: wlan security

Colubris Networks®
Securing your Wireless Future™

Server Management
Starts Here...

Rose Electronics KVM switches allow single or multiple workstations to have local or remote access to multiple computers located in server rooms or on the desktop.

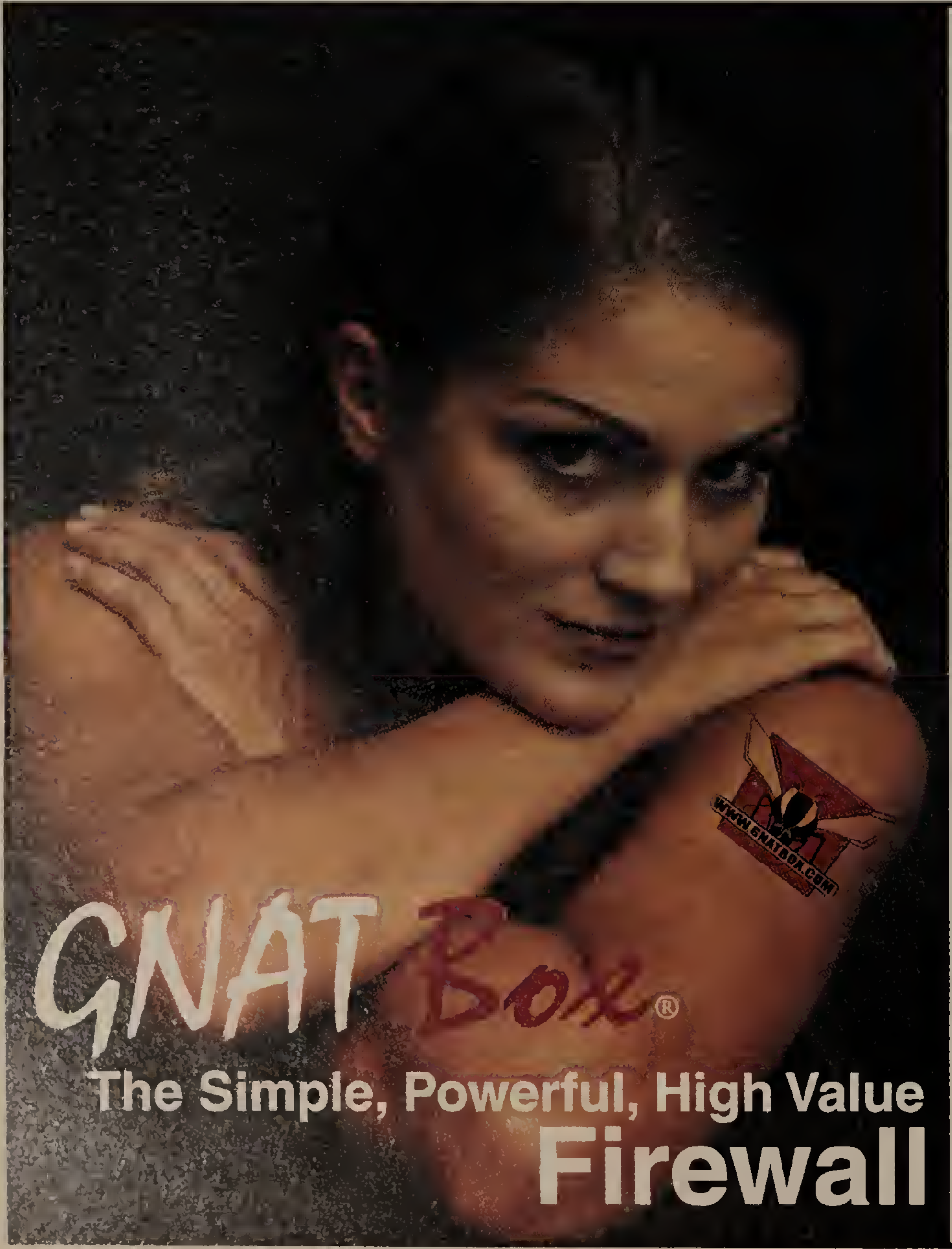
Rose is a leading KVM switch manufacturer with the most complete range of server management products. A KVM industry pioneer, Rose is known for its technically superior and price competitive products.

From simple access to complex configurations, Rose provides easy server management solutions.

Call ROSE today.

Rose Electronics
10707 Stancliff Rd. Houston, Texas 77099
800-333-9343 281-933-7673
USA ▪ CANADA ▪ ENGLAND ▪ GERMANY ▪ BENELUX ▪ AUSTRALIA ▪ SINGAPORE

ROSE ELECTRONICS
WWW.ROSE.COM



At $995.00 with an unlimited user license GNAT Box Firewall isn't cheap...it's cost effective.

Features Include:
- Proven Firewall Technology
- Dynamic Network Address Translation
- Unlimited User License
- High Performance
- Easy to Configure and Operate
- Remote Web Base Management
- Time Based Access Control
- Email, Pager & SNMP Trap Alerts
- Email Proxy with Anti-Spam Features
- Win95/NT Secure Remote Management
- URL and Content Filtering
- Supports Gigabit Ethernet, FDDI, TokenRing 10/100 Ethernet, DSL, Cable Modem & PPP
- IPSec VPN
- Built-in DHCP Server
- Built-in DNS Server
- ICSA Certified

Now Available in the GB Family of Firewall Appliances

ICSA CERTIFIED WWW.ICSA.NET Firewall

Global Technology Associates, Inc.
Sales: 800-775-4GTA • Tel: 407-380-0220
gb-info@gta.com • www.gnatbox.com

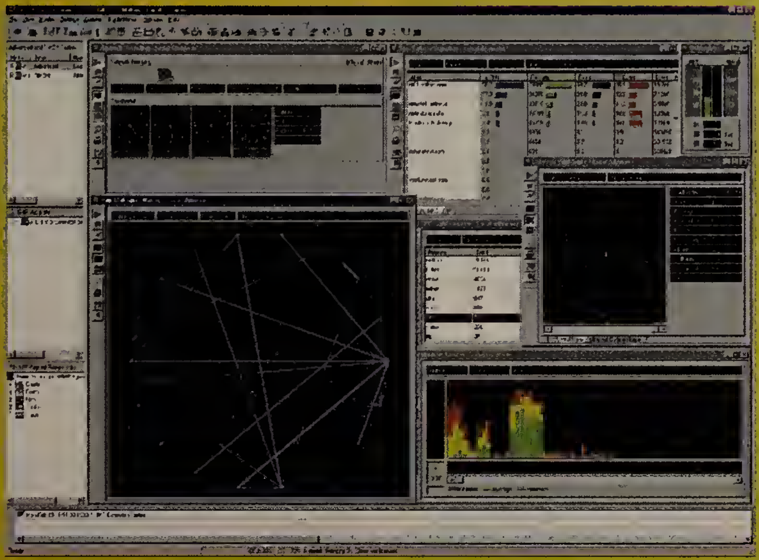
OBSERVER®

High Performance LAN/WAN Troubleshooting & Protocol Analysis Software Solutions

Observer—Removes the Mystery of What is Being Sent or Received by LAN Stations

Observer identifies network trouble spots and costs thousands less than expensive hardware-based analyzers. If you have any network problems, find out the cause with Observer, Expert Observer or Observer Suite.

- **Full packet capture and decode** for over 1000 protocols, including TCP/IP (v4 and v6), NetBIOS/NetBEUI, IPX/SPX, Appletalk, SNA and DECnet
- **Switched mode** sees all ports on a switch gathering statistics from an entire switch or packet capture from any port(s)
- **Long-term network trending** collects statistical data for days, weeks, months, even years
- **Optimized ErrorTrack NDIS drivers** display true errors-by-stations
- **Real-Time Statistics** include Top Talkers, Bandwidth, Protocol Statistics, Efficiency History



- **Additional probes** are $295 per local or remote segment/site/switch
- **Ethernet (10/100/1000), Token Ring, FDD!**

Expert Observer—Identifies Problems and Provides Expert Information in Plain English

Expert Observer includes all of the features of Observer plus real-time and post-capture expert event identification, expert analysis, VoIP expert and modeling of network traffic data.

Observer Suite—The Ultimate Tool For The Most Demanding Power User

Observer Suite provides a full complement of tools that includes all of the features of Expert Observer plus SNMP management, RMON console/Probe and Web reporting. Includes one remote Probe.

OBSERVER®	EXPERT OBSERVER®	OBSERVER® SUITE
$995	$1895	$2995

Call 800-526-7919 or visit us online for a full-featured evaluation:

www.networkinstruments.com

US & Canada (952) 932-9899 • Fax (952) 932-9545 • UK & Europe +44 (0) 1959 569880 • Fax +44 (0) 1959 569881

NETWORK® INSTRUMENTS

Are You Gambling With Your Expensive Data Center Systems?

You may be if you aren't using SharkRack cabinets and racking systems. Our cabinets are made of the highest quality materials, including aluminum extrusion and heavy gauge steel. We use heavy duty fans in our cooling systems. And SharkRacks look great and are featured in some of the world's foremost show-case data centers. Best of all, you can still access disks, CD-ROMs, and other components after your computers are racked. Give us a call today to see how we can help you Save Space, Keep Cool, and Look Good.

Our Keyboard/Flat Panel system takes up only 1 RU in total.

The SharkRack NetBotz environmental monitoring appliance will watch over conditions in our cabinets and send out an alert to notify of problems in advance.

1-877-427-5722
www.sharkrack.com
infoshark@sharkrack.com

Dealer Inquiries Welcome

SHARK RACK

Copyright SharkRack Inc. All rights reserved. Compaq is a trademark of Compaq Corp. HP is a trademark of Hewlett Packard, Inc. IBM is a trademark of International Business Machines, Inc. Sun is a trademark of Sun Microsystems, Inc. Cisco is a trademark of Cisco Systems, Inc. All other trademarks are the property of their respective owners.

CISCO

Buy Lease Authorized Reseller Sell Repair
New Refurbished Used

WORLD DATA PRODUCTS
1 800 553 0592
www.wdpi.com
Email: cisco5@wdpi.com

Nortel
3Com
Cisco Systems Reseller

RENTaNOC™

DEVICE • NETWORK • SECURITY
APPLICATION • MONITORING

interloci
network management
www.interloci.com

You have *4 months* to

Upgrade your MCSE Certification by December 31st . . . or lose it!

Windows2000 Accelerated Exam Prep

Time is slipping away! You only have 4 months to upgrade your MCSE certification with the Accelerated Exam (70-240). Before you take that exam, get the information you need to pass it with LearnKey's Windows 2000 Accelerated Exam Prep training. This course is designed specifically for experienced MCPs. Expert Michael Storm provides the critical instruction you need to prepare and pass the exam. Make your opportunity count by preparing with LearnKey.

Order today & SAVE 10%!

99% Pass Rate!*

Accelerated Exam Kit includes 6 CDs, Osborne Study Guide, MasterExam Test Prep and eSupport Online Mentoring!

We know how to get you certified and we can prove it.

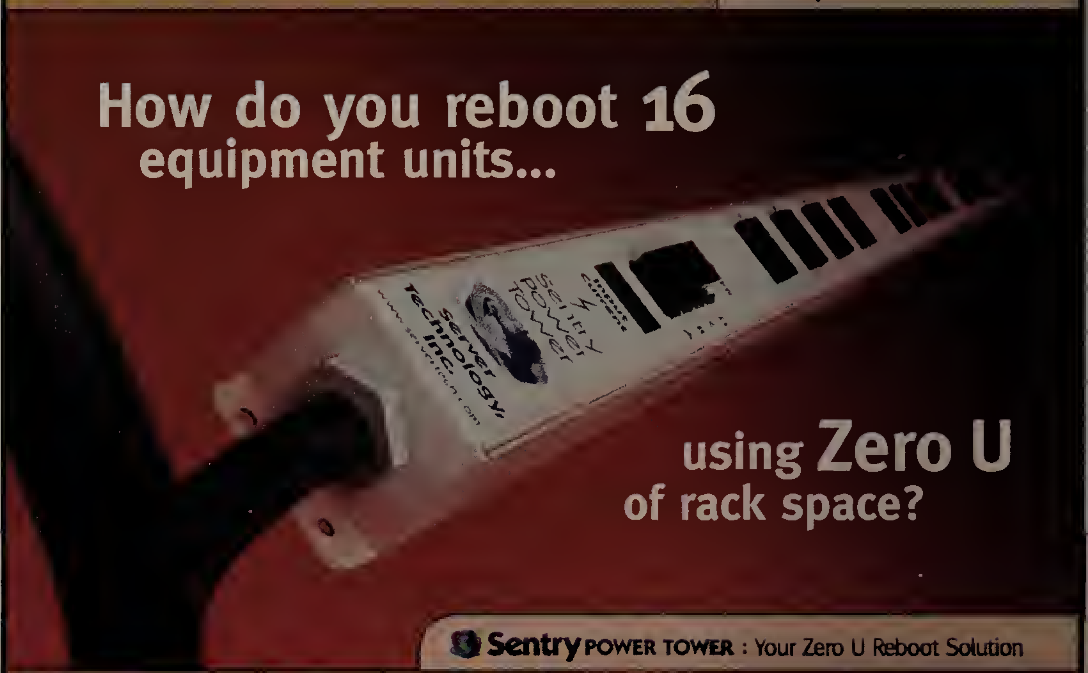
Choose the best solution for your needs:
NETWORK • ONLINE • CD-ROM • VIDEO

Microsoft® • CompTIA® • Novell® • Cisco® • Lotus® • Adobe® • Linux • Corel®

1.800.865.0165 • learnkey.com Use code # 4048 and save 10%!
* See details at www.learnkey.com © 2001 LearnKey, Inc

LearnKey
Learn From The Experts™

Sentry : PowerTower


How do you reboot 16 equipment units...
using Zero U of rack space?
Sentry Power Tower
Server Technology, Inc.

Sentry POWER TOWER : Your Zero U Reboot Solution

16 remotely addressable power outlets — The highest density available of any Remote Power Management vertical strip.

30-amp power input feed distributed across 16 outlets.

Mounts vertically in your equipment rack or cabinet and requires Zero U of rack space.

Load Sense provides real-time current monitoring in the remote screen interface and through a built-in LED display for on-site measurement.

Power-up sequencing of all 16 outlets prevents an in-rush current overload.

Telnet, SNMP, Modem or RS-232 interfaces for easy, practical and secure power management of remote internetworking equipment.

Install the new Sentry Power Tower in your data center, NOC or co-lo facility and gain the advantage of remotely rebooting up to 16 of your equipment units – without occupying any space in your rack or enclosed cabinet.

Try the New Sentry Power Tower in your rack or cabinet and realize the benefits of Intelligent Power Distribution and Remote Power Management.

See our complete product line at www.servertech.co
or call 800.835.1515 or 775.284.2000

Another great product from
Server Technology, Inc.

© 2001 Server Technology, Inc. Sentry is a trademark of Server Technology, Inc.

SUN MICROSYSTEMS • COBALT • CISCO SYSTEMS
SUN
COBALT
CISCO

renewed
USED
buy Sell
LEASE

VISA MasterCard AMERICAN EXPRESS

Tel: 408.727.1122
Fax: 408.727.8002

ReCURRENt
technologies, inc.

3431 DE LA CRUZ BLVD. SANTA CLARA, CA 95054
WWW.RECURRENT.COM INFO@RECURRENT.COM

View Cart Clear Cart

FIBERDYNE LABS
Fiber Optic
Networking Products

FACTORY DIRECT
FIBER OPTIC PRODUCTS

Jumpers, Pigtails, Termination Boxes, Preconnectorized Backbone Cable, Mode Conditioning Cables, Ethernet Converters and Switches, CAT5 Products, Photonic Devices

www.fiberdyne.com

FIBERDYNE LABS, INC.
1-(800) 894-9694
(315) 895-8470
Fax (315) 895-8436

Since 1985

We Buy & Sell CISCO

New & Used
Fully Guaranteed
Overnight Delivery

Se habla Español
Wir sprechen Deutsch

800.451.3407
90 Castillian Drive, Suite 110, Santa Barbara CA 93117

Routers
Switches
Interface Modules
Access Servers
Accessories

www.networkhardware.com
BUY ONLINE

NETWORK HARDWARE RESALE

USED CISCO DIRECT

www.digitalwarehouse.com

IMMEDIATE AVAILABILITY ON MOST PRODUCTS!

Save big on new/used: ➤Routers ➤Gigabit/FE/ATM Switches ➤Access Servers ➤Optical Networking ➤Wireless **BUY/SELL/RENT**

➤CISCO ➤Juniper ➤Lucent ➤Nortel ➤Marconi ➤Foundry ➤Adtran ➤Extreme ➤Quick Eagle

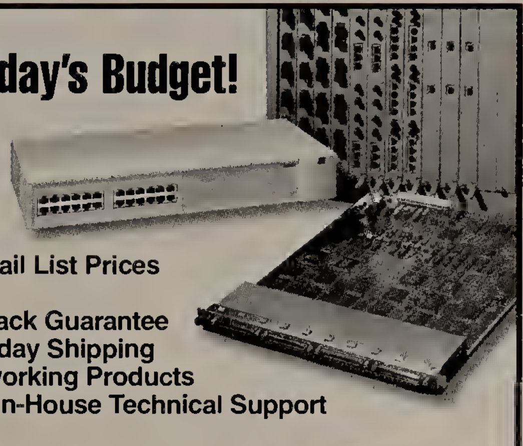
www.digitalwarehouse.com
DIGITAL WAREHOUSE
Your Information Superhighway Discount Source®

Netfast Communications Inc., 56-29 56th Drive, Maspeth, NY 11378 USA
Phone: **1-888-892-4726** or 718-894-7500 Fax: 718-894-1573

Network World - 5/2001

Get More for Today's Budget!

Contact BIZI to SAVE up to 80%



- 50-80% Savings off Retail List Prices
- 120-Day Warranty
- 100% 30 Day–Money Back Guarantee
- Large Inventory, Same day Shipping
- Supplying Quality Networking Products for Over 10 Years with In-House Technical Support

Request a Quote on-line at:
http://www.bizint.com *or* info@bizint.com

(877) 438-2494
or (315) 458-9606 fax: (315) 458-9493

We Buy, Sell, Trade and Lease...

BIZI
Your global partners in new & quality pre-owned networking equipment

CISCO, BAY/NORTEL, 3COM, CABLETRON, EXTREME, FORE/MARCONI

TRAINING DIRECTORY

Cable University
(800) 537-8254
www.CableU.net
FREE online training in network cabling installation & maintenance

NetworkTraining.com
(800) NET-SKIL
(800) 638-7545
Network Analysis & Tool Training
Certified NetAnalyst Testing

BNETSYS Inc.
(800) BNETSYS
www.bnetsys.com
Instructor led & online Cisco certification training @ no charge

Contact these companies today to help you with your training needs!

T3 SYSTEMS INCORPORATED

We BUY/SELL New & Used LAN/WAN Connectivity Products

Specializing in CISCO

$$ TOP DOLLAR PAID $$

T3 Systems, Inc.
500 Cirby Way, Suite D
Roseville, CA 95678
(916) 784-3000
fax: (916) 797-7284
www.T3Systemsinc.com

Overnight delivery available

Authorized Cisco Reseller

Cisco Systems

FIBER OPTIC SOLUTIONS

- T1/E1 & T3/E3 Modems
- RS-232/422/485 Modems and Multiplexers
- IBM 3270 Coax, AS/400 Twinax, and RS/6000 Modems and Multiplexers
- LAN - Arcnet/Ethernet/Token Ring
- Video/Audio/Hubs/Repeaters
- ISO - 9001

S.I.TECH

Toll Free 866-SITech-1
630-761-3640, fax 630-761-3644
www.sitech-bitdriver.com

3Com® Refurbished

- CoreBuilder
- NETBuilder
- PathBuilder

MTMnet, Inc.
"Your Network Technology Source"

Toll Free: 877-868-6638
www.MTMnet.com
sales@MTMnet.com

CISCO
Systems/Features/Memory

CISCO EQUIPMENT

Also Available: Wellfleet, Bay, Fore, Xylogics, Livingston, & Ascend

In Stock • Fast Delivery • No Expedite Charges

COMSTAR, INC.
The #1 Network Remarketer
612•835•5502
Fax 612•835•1927 E-Mail:sales@comstarinc.com

Find the Product and Services that you are looking for on ***Network World Fusion's*** **Product Showcase.**

go to:
www.nwfusion.com
click on:

SmartLinK
Products as Solutions

For more information on advertising in Network World's Marketplace contact:

Enku Gubaie, 800-622-1108 ext. 6465, egubaie@nww.com

3Com DISCONTINUED PRODUCTS HEADQUARTERS

*We **BUY and SELL** New and Used Network Hardware*

Huge Inventory
New and Refurbished:

Corebuilder	Pathbuilder	Accessbuilder
Lanplex	Super Stack	CS2XXX
Netbuilder 2	Office Connect	NICs
Chipcom	Linkbuilder	

We also Specialize in:
Cisco Systems
NORTEL NETWORKS
CABLETRON SYSTEMS
USR
Proteon
Chipcom

Lowest Prices
- Up to 90% Off List
- Lifetime Warranties
- Same Day Shipping
- We Ship Worldwide
- Technical Support
- Service Contracts

4LANWAN.com

Call Toll Free: 1-877-4-LAN-WAN (1-877-452-6926)

4LANWAN.com
Email: sales@4lanwan.com
Fax 516-293-5325
Int'l number 001-1-516-293-5200
A division of Ergonomic Enterprises Inc.
47 Werman Court, Plainview, NY 11803
Established 1983

Monitor PC Users

See multiple computer screens in real time with the award-winning NetOp Remote Control.

Try it free! NetOp®

www.CrossTecCorp.com

NORTEL NETWORKS New-Used Buy-Sell

3Com Cisco Systems Cabletron Systems Bay Networks

WOW! 89% Off!

Why Are We The Best?

- Nortel Service Contracts
- Nortel Service Renewals
- Free Technical Support
- Next-Day Hardware Replacement
- Competitive Prices
- Good As New Gear, Same as New Warranty – *at Better Than New Prices*

Refurbished Specials:

BayStack 450-24T (AL2012E14) with MDA Port 10/100/1000 BT Autosense Switch Limited Lifetime Warranty	Special $995 List $2,695
BLN-2 Router Base Unit (71000) – Complete Includes Dual AC Power Supplies and SRML	Special $1,999 List $12,700
BCN Router Base Unit (73000) – Complete Includes Dual AC Power Supplies and SRML	Special $2,999 List $18,150
ARN 8 MB Ethernet Router Base Unit (CV1001003) Other Memory Config and modules avalible. ***Call now for pricing.***	Special $295 List $1,1[illegible]

Dont want used? Try our low prices on new! Call Today!

Call for Free Quote!
888-8LANWAN
(888-852-6926)
National LAN Exchange • www.nle.com

Celebrating Our 10th

ANYTHING IS POSSIBLE WITH YOUR MCSE

Remember Gilbert? One month ago, his life was on a dead end path. Lame job, lame pay. Your typical IT professional. Then he decided to **GET INTENSE**! At Intense School, Gilbert was treated to luxury hotel accommodations, meals, all his courseware, practice exams, and instruction from top-notch professionals who taught him the technologies and prepared him for his certification exams. After 14 days of the finest training in the industry, Gilbert's life has made a complete 180. Now, with his certification, Gilbert is more attractive in AND out of the marketplace...

- MCSE in 14 days
- MCDBA in 14 days
- Exchange 2000 in 7 days
- MCSD in 14 days
- CCNA^{TM}/CCDA^{TM} in 6 days
- CCNP^{TM} in 16 days
- A+, N+, MCP in 12 days

intense school
Powerful IT Training & Certification

Microsoft CERTIFIED Technical Education Center

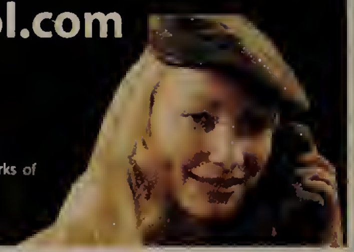
Each of our INTENSE Boot Camps include:
- Top Notch Instructors
- Luxury Accommodations
- Meals
- All Your Courseware
- The Industry's Most INTENSE Guarantee
- Financing Available

REMEMBER - THE NT 4.0 MCSE WILL EXPIRE ON DECEMBER 31, 2001!

NEW YORK METRO | FT. LAUDERDALE, FL | COLUMBUS, OH | SAN DIEGO, CA | DALLAS, TX

Our boot camps aren't for everyone.
Please call today to see if you qualify...
888-328-8094
Or visit us on the web at
www.intenseschool.com

This material is not sponsored, endorsed, or affiliated with Cisco Systems, inc.
Cisco, Cisco Systems, CCNA^{TM}, CCDA^{TM}, CCNP^{TM}, are the trademarks or registered trademarks of Cisco Systems, Inc. All other trademarks are trademarks of their respective owners.



SOFTWARE & ASIC POSITIONS

ONEX COMMUNICATIONS CORPORATION, a suburban Boston-area company specializing in the design, development and marketing of VLSI solutions for emerging, converged communications networks, seeks to fill a number of Software, ASIC, and Systems Engineering positions, at various levels of responsibility, at our site in Bedford, MA.

Most positions require a Bachelor's degree (or equivalent) (some require a Master's degree), together with at least 1 to 8 years relevant industry experience:

Software Engineers:
- SONET; IP; Other Networking Protocols
- API
- Embedded Systems; Architecture
- Test / Qualification
- Firmware

ASIC Engineers:
- Design; Verification

System Engineers:
- Data Networking

Starting salaries from $75,000 - $150,000, commensurate with the position's specific responsibilities, together with contributory medical and dental, life and AD&D coverage, STD, LTD, 401(k), 3 weeks earned time off, and other industry competitive benefits.

Please mail, fax, or email your resume, indicating Reference Code IMSP, to: Onex Communications Corp., ATTN: Ms. Heidy Gisler, 34 Crosby Drive, Bedford, MA 01730; Fax: 781 / 271-9988;
email: IMSP@Onexco.com.
Visit our website at
www.onexco.com.
Onex is An Equal Opportunity Employer.

Cholan, Inc. is seeking a Full time Software Engineer to design, develop, test, maintain and support internet/intranet appl using Java, JDBC, Servlets, XML, C++, VB, Oracle etc under UNIX, WindowsNT OS; develop GUIs, write product documentation and integrate test plans; provide on site maintenance support to clients such as debugging, modifications, fine tuning and code optimization. Require BS or foreign equiv in CS or Engg (any branch) with 2 yrs of relevant exp. Highly competitive Salary. 70% travel to client sites involved. Resumes to HR, 6209 W. 126th Street, Overland Park, KS 66209.

Human Resources Manager: Plans and carries out policies, relating to all phases of personnel activity for software development and consulting buisness to include, transactions on new hires, promotions & terminations, employee benefits & transfers; plan recruitment campaigns and new hires and suitable placements for specific computer positions; provide technical information specifications for development of HR computer information system, to compile, store and retrieve employee data; draw up new employee contracts relating to confidentiality of trade secrets and proprietary products, check for prior breech of contracts, and advise management on adverse effects of hires with on-going contract litigation; supervise employee indoctrination program and handle employee/contractor problems. Must have degrees in computer science, engineering or math related and in business administration (personnel management) and atleast 5 years employement experience in IT industry. $60,000/year. Apply by resume only, to: CEO, Time to Market, Inc., 4010 Moorpark Avenue, Suite $205, San Jose, CA 95117.

Financialoxygen.Com, Inc. was founded in 1999 to develop e-commerce B2B hubs for knowledge, collaboration and transactions serve middle market investors. We are looking for the following:

Software Engineers(SE0401-01-26): to research, execute design and develop Internet applications using C++, J2EE, MQ, XML. Develop specific web based financial applications using Oracle, Sybase ,DB2 databases. Requires a Master's degree in Computer Science or related and 1+ year of experience.

Programmer Analysts(PA0301-01-29): to design and develop financial based applications using client server technology, n-tire technologies with different databases using J2EE, MQ, XML, UML, OOD. Use knowledge of market and accounting principles to develop software. Design product features to meet requirements and perform quality tests for new and existing features. Requires a Bachelor's degree and 2+ years of experience.

Send your resume with position code to: Kishore Kagolanu, C.O.O., Financial Oxygen, 2033 North Main Street, Suite # 340, Walnut Creek, CA 94596.

Programmer Analyst. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test, and document computer programs including network communication programs. Evaluate user requests and software programs for new and modified programs. Write program specifications, code, test, and debug computer programs. Customize hardware and software to client needs. Use of Visual Basic, HTML, Java, Oracle, Sybase, Unix and MS-Access. Reqs. Bachelors in Computer Science, Computer Engineering, Physics, Math or related field of study. Plus 2 years in the job offered or 2 years in a related occupation such as a Systems Analyst or Project Leader. $61,000/year, 40/hrs/wk, 8AM-5PM. Respond by resume to Colorado Department of Labor & Employment, Employment Programs , ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202 –2117 and refer to Job Order No. CO 5004462.

◆

Infodat International, Inc., is a full service information systems solution provider. We have position openings for:

Software Engineers: To research, analyze, design and develop Internet programs for Web based knowledge management, customer relationship management, sales force automation, and e-commerce. Use Java or C + + and HTML programming for system conversion. Requires Masters degree in Computer Science or related field with 1-year experience.

Programmer Analysts: To design, develop and implement Oracle and Product Design, Manufacturing Applications using Oracle, Oracle Developer, SQL, PL\SQL, C and C++ based on UNIX and Windows Operating Systems. Develop and test interfaces between Oracle and legacy systems. Need Bachelor's in Computer Science or related field. Need 2 years of experience in a related occupation.

Send resume to: Malla Mekala, President, Infodat International, Inc., 6300 Richmond Avenue, Suite # 124, Houston, Texas 77057.

MANAGING DIRECTOR/U.S. OPERATIONS

Sycor U.S., Inc seeks a Managing Director for a full time position heading up its U.S. Operations. The Managing Director will be responsible for building Sycor's SAP R/3 consulting business, reengineering and SAP R/3 implementation projects and developing Sycor's internal consulting infrastructure. The position involves designing intranet and extranet topologies and development of integrated logistics, communications and software systems. The Managing Director will be responsible for initiating and building strategic alliances and assessing quality of delivery and tracking resource utilization. Experience required in multiple SAP modules and operational background in one or more of the limited fields of logistics/marketing/sales/manufacturing. This position requires a masters degree or foreign equivalent in business management, operation research, engineering and computer information systems or related fields, plus a minimum of three years experience in the field. Bachelors Degree in one of the enumerated fields with five years progressively responsible experience in the position offered will be accepted in lieu of Masters Degree. Salary starts at $90,000 with a full benefits package. Location: Pittsburgh, PA. Submit cover letter and resume to Sycor U.S., Inc. Penn Center W. 3 #406 Pittsburgh, PA 15276.

Senior Systems Analysts, Programmers, Systems Analysts with strong technical skills. Resumes to Leverage Systems Technologies, Inc. by fax (714) 596-7463 or email resumes to gatienza@LST-USA.com.

Trusted by more hiring managers than any IT space in the world.

IT careers.com

COMP S/W CONSUL. wanted by NJ based IS/IT Professional Consulting Services Firm for locs. throughout US. Must have Bachelor's degree in Comp. Sc. or Engg. exp. in Comp. S/W dev. and/or Consulting. Respond to: HR Dept., Instasofte, Inc., 173 Essex Avenue, Metuchen, NJ 08840 (Ref: 7894IM).

Applications Developer. Design, develop, implement, and maintain complex internet and e-commerce s/ware applications using C/C++, Perl, Java, Servlets, OO, SOL, Unix, Oracle, HTML, NT Server, PKI, and Apache in Solaris or Windows environ. Bach. degree in C.S., Eng'g, or similar field req'd, as is 2 yrs exp. in app. dev. or prog. position. Prior exp. must include exp. w/RDBMS. Compet. salary, day shift, full-time. Resumes to Debra Luling, Job #2423.01, NIC USA, Inc., 414 Union St., Ste. 910, Nashville, TN 37211.

Sr. Systems Analyst wanted by Milford manufacturer. Design, develop, install and implement worldwide corp. financial info systems and reporting tools; supervise training and creation of training materials for programmers worldwide. Requires a BS in Comp. Sci. or equiv. & 5 yrs. exp. in systems analysis. Respond to: C. Barrow, HR 470 Wheelers Farm Road, Milford, CT 06460.

S/W Consultant wanted by NJ based Co involved in IS/IT Professional Consulting Services for job throughout the US. Must have Master's degree in Comp. Sc., Engg. and two years of exp. in Sys. Consultant, Sys. engg. in rel. occ. Respond to: HR Dept., Computech Resources International, Inc., 119 Avenue at the Common, Ste. #5, Shrewsbury, NJ 07702. (Ref: RG7281IM).

SOFTWARE ENGINEERS: Responsible for software integration and external interface development. Use combination of Oracle PL-SOL, CASE tools and PeopleSoft under Oracle 8.x environment to develop, create, modify and maintain application software and/or utility modules for DoD HRMS application. 64K-72K(F-T; 40hr/wk); New Orleans, LA; B.S.Computer Science (or equivalency); 4 yrs experience or related experience in ERP package customization.

Contact: Kenneth Burkhalter
personnel@otisinc1.net
Tel.: (985)781-3892

Talent is the fuel
of the new economy.

Fill up with ITcareers.

Systems Integrator responsible for writing codes for data transformation agents using Java and C++ programming. Will use SOL tools to analyze what is happening in the Oracle database. Must have a Bachelor's degree in IS, CS or related field, foreign degree equivalent accepted. (Employer is willing to accept Master's degree in lieu of Bachelor's). Must have 2 yrs of exp. in the job offered. Salary: $64,795/yr. Send resume to: Valarie Castanet at RMC Industries Corp. 1 Decatur Towncenter, 150 E. Ponce de Leon Ave., Ste. 450, Decatur, GA.

Programmer/Analysts - Design & develop web based & client/server sys for bus. process automation using OOP, C++, SOL Server, ASP, Java, Perl & Oracle. Req: BS comp sci, engg or related field. Resumes to: Abel Solutions, Inc., 2001 Westside Pkwy, Ste 200, Alpharetta, GA 30004

Consultant for NY based co. Must have a Bachelor's degree or US equiv. in Mgmt., Finance and/or Acctg. or Comp Sc. & 3 yrs of exp in Comp. S/W Consulting and/or dev. Respond to: HR Dept., SID Computer Group, Inc., 18 Pebble Lane, Ste. 217, Staten Island, NY 10305. (Ref. 7915IM)

F/T Systems Analyst responsible for computer programming, systems analysis, design, coding, system implementation, maintenance, program management, documentation, training, and other data processing services using SOL, C/C++, Java, and Lotus Notes/Domino. Other responsibilities include learning new applications, coding, developing tests and testing using RDMS, PERL, and CGI. Must have 2 yrs. of exp. in job offered or a position with the same duties. Salary: $80,000/yr. Send resume to: Job# SAC-108, E.C.S., Inc., 8744 Main Street, Suite 101, Woodstock, Georgia 30188.

S/W OA Eng

Dev test strategies, test cases and autom of testing for Internet-based software on a Unix plat. Execute test plans, id, doc and work with the dev team to resolve defects. Must schedule, be effective with reqmnt anal.

2+ yrs exp in s/w app test and test case design. Must know Unix (Solaris or AIX pref), NT 4.0, I- browsers, HTML, JSP, XML, and perf autom tools.

BA in CS req. Email hr@edocs.com. Edocs is EEO. Ref: OA1

Job Title: Programmer/Analyst
Job Type: Full-time
Company Name:
Maxil Technology Solutions Inc
Email Address:
resumes@maxiltechnology.com
Fax: 877-853-6009
Ph : 877-936-2945
Mailing Address:
2625 Butterfield Rd, Suite 138S
Oakbrook, IL - 60523
URL: www.maxiltechnology.com
Job Description:
DUTIES: Analyze, design, develop, and test system and software using Oracle,PL/SOL and Oracle Developer 2000. Extensive experience in customizing the forms and reports in various modules of Informix-4gl. Strong Data Warehousing experience is required. Good Informatica ETL coding experience is needed. Windows NT and UNIX experience is preferred. Strong SOL skills with good Oracle Database experience is desired.Responsible for ensuring accurate data sourcing by interviewing internal clients to determine their data analysis and reporting needs, documenting client process workflow and accurately mapping required data from the source application system to the warehouse. Position would involve data maintenance, development and maintenance of modules developed in Oracle Forms and Reports.Desirable that candidates are able to develop and maintain reports in Crystal Reports 7.0.
EDUCATION & EXPERIENCE: Bachelors in Computers with 4-5 years of experience in Oracle, PL/SOL, Informix and OLAP and ETL tools. Experience in insurance and pharmaceutical industries is desirable.
SALARY : 50,000$ PER YEAR

Software Solutions Group, Inc. is a global provider of information technology and professional business services. We combine business processes and human intellectual capital to deliver strategic solutions for information technology. We are currently looking for the following:

Software Engineers: to research, analyze, design and develop enterprise applications & interfaces for e-commerce, data warehousing to meet customer requirements. Integrate latest Internet technologies with enterprise systems using object-oriented methodologies and extended markup languages. Customize, upgrade and enhance packages such as SAP using extensive knowledge of the business processes and multi-platform server systems. Requires Masters degree in Computer Science or related and also 1+ year of experience.

Programmer Analysts: To design, develop and implement client/server projects using Visual Basic, SOL Server, Internet Information Server, Active server pages, Java on Windows Operating Systems. Need Bachelor's in Comp. Science or related. Need 2+ years of experience.

Send your resume to: Ms. Charanya Sivaraman, Manager Operations, 11099 S. La Cienega Blvd., # 151, Los Angeles, California 90045.

DATA PROCESSING & TELECOMMUNICATIONS PROF: Including Project Leaders, A/P & Systems Analysts specifically w/ SAP, JAVA, CDMA, GSM wireless telecommunications exp. to work in consulting environment. Fax to 818.502.3311 or email losangeles@abraxas.com

MGR/ACCTS: Under supervision manage accounts, define staffing requirements, act as liaison between client & employer & ensure profitable management of accounts. Fax 818.502.3311 or email losangeles@abraxas.com

PeopleSoft has opportunities for technical professionals (all levels/all types) in California (Pleasanton, San Mateo, Santa Clara, Encino, Irvine, and other locations); Waltham, MA: Dallas, TX; Chicago and Westchester, IL; Atlanta, GA; Teaneck, NJ; and across the U.S. for:

Software Engineers and Consultants	**Technical Writers and Curriculum Specialists**
Systems Analysts/Database Administrators	**Marketing Analysts and Product Managers**

For consideration, please send your resume to:
PeopleSoft, Inc.
Attn: Human Resources Manager
2377 Gold Meadow Way, Suite 110
Gold River, CA 95670
Fax: 916-631-1515
We support workforce diversity.

Visit our Web site at:
www.peoplesoft.com

CUSTOMERS • EMPLOYEES • SUPPLIERS

PEOPLE® Soft People power the internet.™

Computer Software Engineer, Applications

Duties

GE Capital Markets Services, Stamford, CT. Develop, create and modify general computer web-based applications software or specialized web-based utility programs. Analyze user needs and develop software solutions. Perform Intranet webmaster role, which includes: communications within the organization and customers; organizing and designing framework to integrate applications and content to the website; and loading of content. Analyze and design databases within an application area, working individually or coordinating database development as part of a team. Assist in developing vision, gameplan and execution for optimum technical design of Intranet platform.

Qualifications

Requirements include a Bachelor of Science degree in Computer Science, Information Technology or closely related field; three years experience managing Websites/IIS Webservers; three years programming experience in Visual Basic, Java, HTML, ASP; two years experience managing databases in SQL server and Oracle.

Join Us

GE is an equal opportunity employer. Send resume and cover letter referencing position GECCMS/260065/AN030 to: Elisabeth Lee, Human Resources, GE Capital Markets Services, 3001 Summer Street, Stamford, CT 06927.

GE Capital
Capital Markets Services

We bring good things to life.

Senior Manager - Firmware Development: Will direct a team of firmware engineers in the analysis, design & development (using C/C++ & Assembly) of firmware architecture (running on RTOs) in real-time, multi-threaded, embedded environment (VxWorks) for broadband high-speed network access devices. Will devise proposals for various pieces of equipment such as BIU, SAS, and NDS. Will coordinate with Hardware & Software groups to ensure design compliance with network management protocols (TCP/IP) & configuration specifications using configuration management software (e.g. CVS, ClearCase, SourceSafe). Directs implementation of firmware to result in maximal throughput for all software services offered by these products. Coordinates & implements integration & oversees diagnoses & debugging by engineers (using in-circuit emulators, logic analyzers, & software debuggers) of all software modules for all of the products listed. Forecasts costs of firmware engineering research & development projects & directs preparation of budget requests. Oversees departmental recruitment & hiring, performance evaluations & salary adjustments & submits recommendations to Vice President of Engineering. Requires Master of Science in Computer Science, Engineering, Physics or a closely related field and 6 years experience in job offered or 6 years experience as a Project Manager, Chief Engineer, Architect, or any related senior level software engineering position developing real-time embedded networking systems. Must also possess demonstrated expertise in embedded systems design and development on VxWorks or a similar real-time embedded operating system; expertise in utilizing TCP/IP protocol suite and C/C++ programming languages; and expertise in the application and implementation of data and voice networking concepts including broadband technologies. 40+hrs/wk; 9a-6p (M-F); $100,000 - $125,000/yr. Must have unrestricted authorization to work in U.S. Submit resume in duplicate to: Case # 20013909, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114. EOE

Satyam Computer Services looking for individuals to fill multiple positions
- Client Server Developers
- Mainframe Developers
- Web-based Developers
- Quality Assurance Testers/Analysts
- Project Managers

Urgent skills in demand include:
  - Java, C on Unix, AIX, IRIX, TCP/IP/SNMP/RPC or embedded SOL, Peoplesoft
  - Lotus Notes, SAP/ABAP, AS400
  - Enterprise Datawarehouse Development, Unix client server architecture, design, datawarehousing tools

Will serve multiple clients on projects throughout the U.S.
Entry, Mid-level & Senior Level positions available.
E-mail resumes to:
Resumes@satyam.com
Include JOB ORDER #091701 on resume

INFORMATION
SERVICES MANAGER
CITY OF ROCKFORD, ILLINOIS

The City of Rockford (population 150,000 +) seeks an INFORMATION SERVICES MANAGER to supervise the Information Services Division. The division is responsible for: (a) installation and maintenance of the NT network which includes 8 servers and over 500 PC's at City Hall and 27 remote sites, (b) programming and maintenance of the City's financial software and other in-house software systems, (c) installation and maintenance of the City's internal and external e-mail systems, (d) design and maintenance of the City's web page, (e) help desk for users, and (f) computer operations. This position also requires that the incumbent serve as a representative of the City in promoting Information Services development with various community and citizen groups.

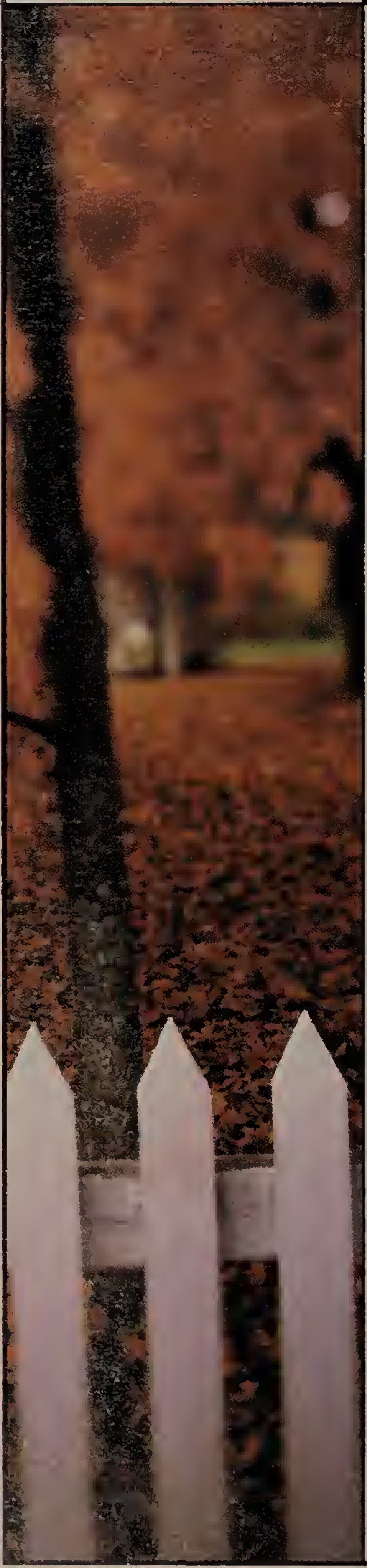
The successful candidate will demonstrate thorough knowledge of principles and practices of systems analysis and design, multi-platform computer languages, network operating systems, installation, configuration, programming, maintenance, and support. Strong leadership, effective communication, interpersonal skills and supervisory experience are a must.

Graduation from an accredited four-year college or university with a Bachelor's degree in computer science, information systems, or a related field and at least six years of experience in the field of information technology, in both mainframe and client server environments. A satisfactory equivalent combination of experience and training which ensures the ability to perform the work may be substituted for the required experience.

Starting salary $45,011 - $56,264 (DOO) with growth potential to $67,517 with excellent benefits. Area residency required within 1 yr. of hire. Submit detailed resume with current salary by 10/5/01 to: Marie Roman, Compensation and Benefits Coordinator, City of Rockford, 425 E. State St., Rockford, IL 61104, Tel (815) 987-5580 Fax (815) 967-6924.

Information Systems Specialists needed in Seabrook, Texas by shipping company to provide support of human machine interface using Visual Basic for logistics analysis for shipping. Develop, analyze, and program shipping and logistics web applications. Must have a Bachelor's in Computer Science and 2 yrs exp. in the job offered or in logistic analysis for shipping. Fax Resume to Gaylene Webb HR Manager 713-844-2355 or mail to Odfjel Terminals (Baytank) Inc. 12211 Port Road, Seabrook, Texas 77586. Put code IT on Resume

Move your career to Fannie Mae's neighborhood.



We live at the very center of the U.S. housing finance industry.

Around here, we're in the business of breaking down barriers. We work with our lender partners to help make sure that nothing comes between America's working families and their dreams of homeownership. In fact, ensuring the availability of low-cost mortgage funds is at the heart of everything we do at Fannie Mae.

Fannie Mae, a Fortune 500, NYSE company, is one of the most admired corporations in America. Our extraordinary commitment to our employees is well recognized by leading publications including *Fortune*, *Washingtonian* and *Computerworld*. Our compensation and benefits packages are among the finest, and are designed to help meet the evolving needs of our employees. They include 3 weeks of vacation, 12 holidays, paid volunteer leave, employer-assisted housing, employee stock purchase plans, and flexible work options.

Want to build something truly great with your talent? That opportunity lives right here.

For information about career opportunities at Fannie Mae, visit our Web site and apply online today. Please reference **ITC924**.

www.fanniemae.com/careers

Fannie Mae is an equal opportunity employer that promotes workforce diversity and hires without regard to race, color, religion, national origin, age, gender, marital status, disability, sexual orientation, veteran status, or other protected status. We promote a drug-free work environment.

FannieMae.

Check out our WITI FastTrack Supplement today

If organizations want to flourish in the global economy, leaders need to nourish their employees. Our Women in Technology International (WITI) FastTrack coverage will cover the trends and techniques of leading companies around the United States. If you're interested in a top IT environment offering first-class treatment, check out WITI FastTrack. The list below offers just a sample of the exceptional employers featured in this supplement.

- *Canon USA, Inc.*
- *Capital One*
- *Gartner Group*
- *Verizon*
- *Citicorp*
- *Compuware*
- *RPI Lally School of Management*

For more information on WITI FastTrack, please call Janis Crowley at 1-800-762-2977 ext. 7607, or email at janis_crowley@itcareers.net.

MBNA Hallmark Information Services, a subsidiary of MBNA, the world's largest independent credit card issuer, is accepting applications for **several Lead Software Engineering positions.**

Will provide technical and administrative leadership in implementation, use and development of production operation software tools. This includes working with multiple departments in the planning, designing and implementation of new functions/capabilities.

Requirements: 5+ years of progressive experience in maintenance/development of software applications. Four-year college degree in computer science or technical training equivalent. Demonstrated capability with distributed, client/server system development and implementation needed. Experience with programming languages, relational database concepts and theory and relational database products, such as Sybase, Oracle and Informix required.

Please forward your resume and a cover letter, referencing code number DYLA991266, Attn: Ms. Lisa Rodriguez, MBNA Hallmark Information Services, M-S 4411, 16001 Dallas Parkway, Addison, TX 75380-9051.

We are proud to be an Equal Opportunity/Affirmative Action Employer. ©2001

MBNA Hallmark Information Services, a subsidiary of MBNA, the world's largest independent credit card issuer, is accepting applications for several **Software Engineering** positions.

This position is responsible for technical analysis, designing, coding and testing distributed application systems software. This position also provides support for production applications, to include problem analysis and resolution. Requirements include B.S. in Computer Science, Math, Engineering or equivalent. Minimum of 2 years experience in maintenance/development of software applications and with UNIX and NT operating systems required. Minimum of 2 years experience with Microsoft C++, Visual Basic, PowerBuilder or related development app-lications and tools.

Please forward your resume and a cover letter, referencing code number DYLA991267, Attn: Ms. Lisa Rodriguez, MBNA Hallmark Information Services, M-S 4411, 16001 Dallas Pkwy, Addison, TX 75380-9051.

We are proud to be a voluntary Equal Opportunity/Affirmative Action Employer ©2001

Qualified candidates will possess a minimum of 2 years of experience in Software Quality Certification. Strong testing & Problem analysis skills required. Ability to write Test plans & run test scripts required. Experience with POS, SQL Server, windows NT, VB & Lotus Notes is a must. B.S. in C/S or BIS or Bus. Admin or foreign eqiuv & or combination of edu/exp will be accepted. Resumes & Salary expectations to HR, Compris Technologies, Inc., 1000, Cobb Place Blvd., Kennesaw, GA 30144.

◆

Web Solutions, Inc., has immediate multiple openings for IT professionals with at least 1 yr. industry exp. or equiv. in Sun Solaris, C, Pro*C, Unix, & at least one of the following skills: Oracle 7.x/8.0, Dev. 2000, SQL*Plus, VB. B.S. or equiv. C/S, Engg., Math or rel. field reqd. Pay Commensurate with exp. Foreign equiv. of educ./exp. or comb. will be accepted. Travel/relocation reqd. Resumes & sal. expectations to HR, 397 East Las Colinas Blvd., Ste. 180, Irving, TX 75039.

IT careers.com

where the best get better

1-800-762-2977

Your best investment

is your professional network.

WITI's 2001 PROFESSIONAL WOMEN'S SUMMIT & EXPOSITION

October 24-25, 2001

Hynes Convention Center ▾ Boston, MA

For more information, conference package pricing or to register for the **PROFESSIONAL WOMEN'S SUMMIT** please visit us at **www.witi.com** or call toll-free **800.334.WITI**

WITI offers a dynamic 2-day accelerated program that will provide every professional women with the essential tools, opportunities, insights and connections to achieve her goals. Take advantage of this unique occasion to network with top leaders and visionaries utilizing technology to succeed.

Over the course of 2 days you will be offered:

- Powerful keynote sessions
- Practical skill-building workshops
- Dynamic roundtable discussions
- Highly interactive panel discussions
- ***Networking, Networking, Networking.***

I have learned so much about myself, my environment, and the people that work with me and live with me from this WITI Conference. The only thing that I can say is that as a professional woman in any technological or business field, you MUST attend this conference!

Kathrine Roberts, Mainframe Programmer, West Corporation

Sign up for the Boston Conference before September 21, 2001 and receive a $200 discount off the at-the-door price.

sponsors include:

Capital One

First Union

IDX

K3M Key3 Media Group

Office Depot
Taking Care of Business

Prudential Financial

Raytheon
Expect Great Things

RHI Consulting
Information Technology Professionals

WITI Women in Technology International

Advancing Women Through Technology

WITI.COM | 800.334.WITI

Dissecting the Windows 2000 Server Exam

Part 1 of a 3 Part Series

The Installing, Configuring and Administering Microsoft Windows 2000 Server exam (#70-215) became available in June as a requirement in the Windows 2000 MCSE certification track. As of Fall 2000, it does not employ adaptive testing, but is a standard exam with a large number of verbose questions. It is administered through both Virtual University Enterprises (www.vue.com) and Prometric (www.2test.com) testing centers and, like all Microsoft exams, costs $100 to take.

Exam Specifics

There are 51 questions asked, and a candidate has 120 minutes to answer them, with a required passing score of at least 660 (translating to passing with 34 right answers). While all of the questions are overly wordy, many also employ screen shots or diagrams. A preponderance of the questions are single-answer multiple choice (indicated by a radio button) or multiple-answer multiple choice (indicated by check boxes). The majority of the latter tell you how many selections to make, while a few ask that you choose all that apply. A few questions employ other technologies, such as drag-and-drop (referenced as "Select and Place.")

The objectives for the exam are divided into seven categories, although the score report does not show individual performance within each. The seven categories are:

1. Installing Windows 2000 Server
2. Installing, Configuring and Troubleshooting Access to Resources
3. Configuring and Troubleshooting Hardware Devices and Drivers
4. Managing, Monitoring and Optimizing System Performance, Reliability and Availability
5. Managing, Configuring and Troubleshooting Storage Use
6. Configuring and Troubleshooting Windows 2000 Network Connections
7. Implementing, Monitoring and Troubleshooting Security

A complete listing of the sub-objectives, as well as the audience profile the exam is targeted for, can be downloaded from www.microsoft.com/trainingandservices/exams/examasearch.asp?PageURL=/TrainingAndServices/content/exams/70-215.txt. This article looks at the exam in terms of the seven categories and what you must know to pass each.

Installing

The bare minimum requirements for Windows 2000 Server are equal to a Pentium 133 (Intel-based hardware only), with at least 128MB of RAM (256MB recommended) and 1GB of free hard drive space. It is always highly advocated that the Hardware Compatibility List (HCL) be examined before doing any installations. There is a copy of the HCL file on the installation CD, but the newest copies are accessible at Microsoft's Web site.

You can upgrade only from Windows NT Server 3.51, Windows NT Server 4.0 and Terminal Server (4.0). Anything else is essentially considered a clean installation. The Server product supports up to four CPUs, while Professional will work with two and Advanced Server will support eight.

The simplest installation of all is an attended installation, whether it be from the CD or over the network. Depending upon the existing operating system, either Winnt.exe or Winnt32.exe is used to start the installation. The major functions and switches utilized by the two executables differ, as Figure 1 shows.

Figure 1: Differences in Winnt and Winnt32

Purpose	Winnt parameter	Winnt32 parameter
Specify a temporary drive to use other than the default	/t	/tempdrive
Use an answer file to automate setup	/u	/unattend
Execute a command at the end of setup	/e	/cmd
Check for upgrade compatibility		/checkupgradeonly
Add the Recovery Console to the installation		/cmdcons
Don't restart after the copy operation		/noreboot

Upgrades to Windows 2000 come in the form of service packs. Each service pack contains patches and fixes to operating-system components needing such, as well as additional features. A service pack is a self-running program that modifies your operating system. It isn't uncommon within the lifetime of an operating system to have two or three service packs.

Successive service packs include all files that have been in previous ones. Therefore, if you perform a new installation and the latest service pack is Service Pack Four, you do not need to install Service Packs One, Two and Three. You need only install Service Pack Four after the installation to bring the operating system up to the current feature set.

During the installation, Windows 2000 creates six log files at various stages along the way. All six logs are created within the %SystemRoot% or %SystemRoot%\Debug folders (C:\WINNT and C:\WINNT\DEBUG, by default). If you have a puzzling problem, look at these logs and see if you can find error entries there.

Accessing Resources

Share permissions apply only when a user is accessing a file or folder through the network. Local permissions and attributes are used to protect the file when users are local. With FAT and FAT32, you do not have the ability to assign "extended" or "extensible" permissions, and the users sitting at the console effectively are the owners of all resources on the system. As such, they can add, change and delete any data or file that they wish.

With NTFS as the file system, however, you are allowed to assign more comprehensive security to your computer system. NTFS permissions are able to protect you at the file level, while share permissions can be applied to the directory level only. NTFS permissions can affect users logged on locally or across the network to the system where the NTFS permissions are applied. Share permissions are in effect only when the user connects to the resource via the network. Figure 2 shows possible NTFS file permissions.

As with earlier versions of the operating system, in Windows 2000 the default for newly created entities is equal to Everyone–Full Control. The No Access permission, however, that was available in all previous versions of NTFS (meaning in Windows NT) does not exist in NTFS 5 and Windows 2000. The Deny permission overrides all other permissions. In the absence of Deny, rights accumulate through individual and group assignments, as well as through folder and file assignments. In the case of a conflict, file permissions override folder permissions.

Moving or copying a file to a new directory could change the permissions on an NTFS file. This depends on whether the file is moved or copied and on whether the target directory is on the same NTFS volume as the original.

When a file is copied from one directory to another on the same NTFS volume, the file inherits the directory permissions for new files of the target directory. When a file is moved from one directory to another on the same NTFS volume, it retains the NTFS permissions it had from the original directory.

This concept gets confusing when files are moved or copied from one NTFS volume to another NTFS volume. When you copy a file from one NTFS volume to another, the file will always inherit permissions of the target directory. The same is true when you move a file between NTFS volumes. This is due to the fact that the file is not actually moved between NTFS volumes. The actual process is outlined here:

1. The file is copied to the target directory. This causes the file to inherit the permissions of the target directory.
2. The file in the target directory is compared to the original file, and it's verified that the two are identical.
3. The original file is deleted from the original directory.

Figure 2: NTFS File Permissions

NTFS Permission	Meaning
Full Control	Gives the user all the other permissions as well as permission to take ownership and change permission.
Modify	Combines Read & Execute permissions with Write permission and further allows the user to delete the file.
Read & Execute	Combines the permissions of Read with the ability to Execute.
Read	Allows the user to view the contents of the file and see ownership and attributes.
Write	Allows the user to overwrite the file, as well as to change attributes and see ownership and permissions.

A printer name can be contain up to 32 characters; it doesn't have to reflect the name of the driver, device or any other item in use. As you can with other resources and shares, you can place a dollar sign ($) at the end of the name to prevent it from being visible to all other users, even though you may choose to share it. When adding a printer from the network, if you do not know the path, you can leave the field blank and click Next to invoke the Browse feature. No such browse feature is available for the Internet printer option, so you must specify an URL to go on to the next dialog box of the setup wizard.

Printer Priority is in no way related to Print Job priority. The priority for a printer defaults to One, but it can be any number between one and 99. When more than one printer is printing to the same device, it is useful to change priorities (to allow the one with the highest priority to print first).

A printer pool offers an efficient means of streamlining the printing process in many environments. By the simplest definition, a printer pool is a single logical printer that prints to more than one printing device. It prints jobs sent to it to the first available printing device and provides the throughput of multiple printing devices with the simplicity of a single printer definition. Windows 2000 ensures that no single device is ever sent more than one document at a time if other devices are currently available. This ensures efficient utilization of all printing devices.

Stay Tuned - Part II Series
October 1, 2001 issue

For information on Advertising in the the ITCareers section please contact: Janis Crowley, 650.312.0601 or janis_crowley@itcareers.net.

Produced by: Text taken from the November 2000 issue of CertMag's StudyGuide, www.certmag.com.

Admission to the Exhibits
is FREE with this ad!
Visit www.windowsonhealthcare.com
to register.

Windows ON HEALTHCARE 2001

Discover solutions that reach across the continuum of care

Explore a full range of the latest technologies to help you enhance your organization's productivity, increase patient satisfaction, improve the quality and delivery of care — and most importantly — leverage your existing technology investments.

- Build customer loyalty and long-term financial viability
- Learn about the latest e-medicine tools to improve patient health
- Leverage new technologies into sound business practices and growth opportunities
- Select the right solutions to achieve HIPAA compliance

Real solutions for integrated e-healthcare

Conference: October 29 – November 1, 2001
Exhibition: October 30 – October 31, 2001
San Diego Convention Center, San Diego, California

Register at www.windowsonhealthcare.com by August 31, type in Priority Code "IDG" and you'll save $100!

Plus, receive a special offer on the Compaq iPAQ™ hand-held device with clinical applications from Allscripts — just for registering!

MS-HUG
Microsoft Healthcare Users Group

The Seventh Annual Conference
and Exhibition of the Microsoft
Healthcare Users Group (MS-HUG)

PRODUCED BY:
K3M Key3Studios
A DIVISION OF
KEY3MEDIA GROUP, INC.

Copyright © 2001 Key3Studios, Inc., 300 First Avenue, Needham, MA 02494-2722. All Rights Reserved Key3Media, Key3Studios, Windows on Healthcare, and associated design marks and logos are trademarks owned or used under license by Key3Studios, Inc., and may be registered in the United States and other countries. Windows is a trademark of Microsoft Corporation and is used by Key3Studios under license from Microsoft. WH01-9892 8/01

Sales Offices

Carol Lasker, Associate Publisher/Vice President
Jane Weissman, Sales Operations Coordinator
Internet: clasker, jweissman@nww.com
(508) 460-3333/FAX: (508) 460-1237

New York/New Jersey
Tom Davis, Associate Publisher, Eastern Region
Elisa Della Rocco, Regional Sales Manager
Terry Sanders, Account Executive
Aimee Jacobs, Sales Associate
Internet: tdavis, elisas, tsanders, ajacobs@nww.com
(201) 587-0090/FAX: (201) 712-9786

Northeast
Donna Pomponi, Regional Sales Manager
Kathryn Zinn, District Manager
John Mahoney, Account Executive
Caitlin Horgan, Sales Assistant
Internet: dpomponi, kzinn, jmahoney, chorgan@nww.com
(508) 460-3333/FAX: (508) 460-1237

Mid-Atlantic
Jacqui DiBianca, Regional Sales Manager
Marta Hagan, Sales Assistant
Internet: jdibian, mhagan@nww.com
(610) 971-1530/FAX: (610) 975-0837

Midwest/Maryland
Eric Danetz, Senior District Manager
Aimee Jacobs, Sales Associate
Internet: edanetz, ajacobs@nww.com
(201) 587-0090/FAX: (201) 712-9786

Central
Dan Gentile, Midwest Regional Director
Gracie Vela, Sales Assistant
Internet: dgentile, gvela@nww.com
(512) 249-2200/FAX: (512) 249-2202

Northern California
Sandra Kupiec, Associate Publisher, Western Region
Miles Dennison, Regional Sales Manager
Sean Weglage, Senior District Manager
Carmela Baglione, Account Executive
Luisa Luk, Account Executive
Cathy Song, Account Executive
Tina Barnes, Sales Operations Manager
Celina Esquivias, Sales Assistant
Internet: skupiec, mdennison, sweglage, cbaglione, lluk, csong, tbarnes, cesquivias@nww.com
(650) 577-2700/FAX: (650) 341-6183

Northwest/Rockies
Karen Wilde, Regional Sales Manager
Lara Greenberg, Regional Sales Manager
Kim Gaffrey, District Manager
Internet: kwilde, lgreenberg, kgaffrey @nww.com
(650) 577-2700/FAX: (650) 341-6183

Southwest
Becky Bogart Randell, District Manager
Angela Norton, Sales Assistant
Internet: brandell, anorton@nww.com
(949) 250-3006/FAX: (949) 833-2857

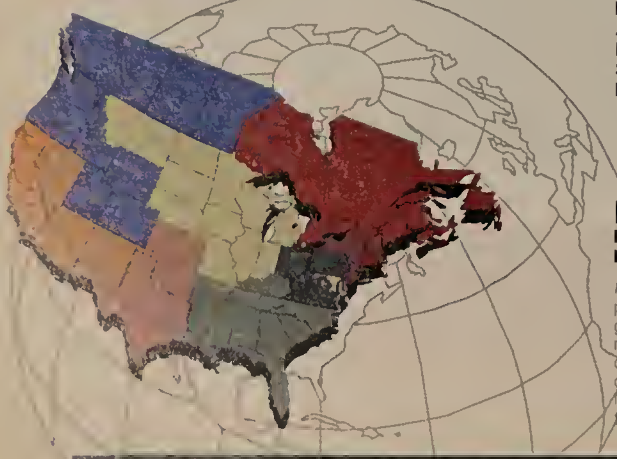
Southeast
Don Seay, Regional Sales Manager
Internet: dseay@nww.com
(404) 845-2886/FAX: (404) 250-1646

Custom Publishing
Shaun Budka, Custom Media Solutions Manager
Internet: sbudka@nww.com
(508) 460-3333/FAX: (508) 460-1237

Fusion
James Kalbach, Director, of Online Sales
Jeff Schwartz, Online Account Manager
Stephanie Gutierrez, Online Account Manager
Debbie Lovell, Online Account Manager
Kristin Baker, Online Operations Manager
Internet: jkalbach, jmschwartz,
sgutierrez, dlovell, kbaker@nww.com
(610) 341-6025/FAX: (610) 971-0557

MARKETPLACE
Response Card Decks/MarketPlace
Richard Black, Director of MarketPlace
Karima Zannotti, Senior Account Manager
Enku Gubaie, Senior Account Manager
Cara Peters, Account Manager
Amie Gaston, Account Manager
Sharon Stearns, Sr. Media Dev. & Operations Mgr.
Chris Gibney, Sales Operations Coordinator
Internet: rblack, kzannott, egubaie, cpeters,
agaston, sstearns, cgibney@nww.com
(508) 460-3333/FAX: (508) 460-1192

IT CAREERS
VP/General Manager, Janis Crowley, East Regional Manager, Deanne Holzer, Midwest Regional Manager, Laura Wilkinson, Western Regional Manager, Donna Dugo, Western Account Manager, Whitney Nagy, Marketing Director, Kelli Flanagan, Operations Manager, Donna Kent, Advertising Coordinator, Leilani Lopez, Advertising Coordinator, Carla Amaral, Marketing Specialist, Heidi Tanakatsubo, Sales Support, Tina Silveira, Sales Support, Nikki Wilson(800) 762-2977/FAX: (650) 286-2770



Network World, Inc.

118 Turnpike Road, Southborough, MA 01772
Phone: (508) 460-3333

TO SEND E-MAIL TO NWW STAFF
firstname_lastname@nww.com

Evilee Thibeault, CEO/Publisher
John Gallant, President/Editorial Director
Eleni Brisbois, Administrative Planning Manager

FINANCE
Mary Fanning, Vice President Finance
Paul Mercer, Finance Manager
Mary Kaye Newton, Billing/AP Coordinator

HUMAN RESOURCES/BUSINESS SERVICES
Monica Brunaccini, V. P. H.R./Business Services
Elizabeth Price, Human Resources Manager
Eric Cormier, Human Resources Representative
Frank Coelho, Business Services Manager
Lisa Thompson, Business Services Administrator
Mark Anderson, Business Services Supervisor
Kevin McMillen, Business Services Coordinator

MARKETING
TerryAnn Croci, Director of Marketing
Wendie Larkin, Senior Public Relations Manager
Barbara Sullivan, Senior Research Analyst
Johanna Lombardi, Marketing Communications Manager
Donna Kirkey, Senior Design Manager
Kristin Wattu, Senior Marketing Specialist
Judy Schultz, Senior Graphic Designer
Cindy Panzera, Graphic Designer
Nancy Petkunas, Marketing Specialist

GLOBAL PRODUCT SUPPORT CENTER
Nancy Parquette, Corporate Programs and Events Manager

ADVERTISING OPERATIONS
Karen Lincoln, Senior Director of Advertising Operations
Maro Eremyan, Advertising Coordinator
Jami Thompson, Advertising Coordinator
Veronica Trotto, Direct Response Ad Coordinator
Cheryl Hill, Traffic Coordinator

PRODUCTION
Ann Finn, Senior Production Director
Greg Morgan, Production Manager
Mike Guerin, Senior Print Buying Supervisor

CIRCULATION
Richard Priante, Senior Director of Circulation
Darcy Beach, Circulation Operations Manager
Bobbie Cruse, Subscriptions Manager
Mary McIntire, Senior Marketing Specialist

RESEARCH
Ann MacKay, Research Director

DISTRIBUTION
Bob Wescott, Distribution Manager/(508)879-0700

IDG LIST RENTAL SERVICES
Paul Capone, Account Executive
P.O. Box 9151, Framingham, MA 01701-9151
(800) 343-6474/(508) 370-0825, FAX:(508) 370-0020

SEMINARS AND EVENTS
Robin Azar, Vice President of Events
Michele Zarella, Director, Events Business Development
Sandra Gittlen, Events Editor
Betty Amaro-White, Event Finance Manager
Andrea D'Amato, Sales Director/Strategic Partnerships
Kristin Ballou, Senior Event Sales Manager
Sandy Weill, Event Sales Manager
Tricia Fiscale, Sales and Marketing Coordinator
Debra Becker, Dir., Marketing & Audience Development
Amy Letichevsky, Marketing Manger
Timothy Johnson, Marketing Coordinator
Kevin Gilligan, Director, Events Operations
Andrea Fusco, Registration Manager
Jill Keaveney, Senior Event Planner
Tim DeMeo, Event Coordinator

ONLINE SERVICES
Alonna Doucette, V.P., Online Services
Hillary Freeley, Director, Online Audience Development
Charley Spektor, Director, Business Development
Adam Gaffin, Executive Editor, Online
Melissa Shaw, Managing Editor, Online
Jason Meserve, Multimedia Editor
Sheryl Hodge, Online Copy Chief
Carryl Hauser, Online Copy Editor
Marlo Matoska, Senior Web Producer
Katherine Ward, Web Producer
Christopher Cormier, Web Producer
Kris Guay, Associate Web Producer
Elaine Valovic, Web Researcher

INFORMATION SYSTEMS/NEW MEDIA SERVICES
W. Michael Draper, V. P. Systems & Technology
Tom Kroon, Senior Software Engineer/Architect
Bob Roddy, Web Software Engineer
Manav Sehgal, Web Software Engineer
William Zhang, Senior Software Engineer
Rocco Bortone, Senior Network Manager
Peter Hebenstreit, Network Specialist
Kevin O'Keefe, Systems Support Manager
Brian Wood, Senior Systems Support Specialist
Joshua Mason, Systems Support Specialist
Puneet Narang, Manager of Database Technologies
Pam Gertsios, Database Specialist
Anne Nickinello, Director of New Media Services
Deborah Vozikis, New Media Design Manager
Sean Landry, Web Producer
Michael Ferreira, Graphics Production Coordinator

IDG

Patrick J. McGovern, Chairman of the Board
Kelly Conlin, CEO

Network World is a publication of IDG, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. IDG publishes over 275 computer publications in 75 countries. Ninety million people read one or more IDG publications each month. *Network World* contributes to the IDG News Service, offering the latest on domestic and international computer news.

NetworkWorld

Editorial Index

3Com 7,8
3PARdata 16

A
Akamai Technologies 33
Alchemy Lab 19
Allied Telesyn 19
AltaVista 8
Arbor Networks 52
Arescom 31
Ariba 14
Art Technology Group 25
Asta Networks 52
AT&T 7,12,33,60

B
Baltimore Technologies 25
BEA Systems 54
Benchmark Storage Innovations 19
Bindview 18
Borland 8

C
Caldera 8
Canobeam 12
Captus Networks 52
Cereva 16
Cisco 7,8,31,58,65
Commerce One 14
Compaq 7,8,50
ConfigureSoft 18

E
Ecora 18
EMC 8
Enterasys Networks 7
Equinix 52

F
F5 Networks 19
FindGround Networks 19
Foundry Networks 7

H
Hewlett-Packard 7,22,31,50,54

I
IBM 25,54
Impart Technology 42
Intel 8
iTenol 18

J
Jeeves Solutions 25

L
Lucent 7,8

M
Marconi 35
Mazu Networks 52
MCK Communications 31
Microsoft 7,8,18,31,50,54,94
Motive Communications 25

N
Narus 35
NEC America 8
Netopia 8
noHold Communications 25
Nortel 7,12
Novell 25

O
OmniSky 50
Oracle 54

P
Palm 50
PatchLink 18
PeopleSoft 42

Q
Quintum Technologies 31
Qwest Communications 35

R
Red Creek Communications 16
Red Hat 8
Research in Motion 12,31,50

S
SpiderCache 19
Sprint PCS 12,40,50
Storability 35
Sun 54
Surgient Networks 19,71

V
VeriSign 60
Verizon 12,50
Visualware 28

W
WorldCom 7,33

Y
Yahoo 25
YottaYotta 16

Z
Zambeel 16

Advertiser Index

Advertiser	Page #	URL
ACI International	80	www.aci.com
AT & T	61, 63	www.att.com
Avocent	79	www.avocent.com
Blue Cat Networks	79	www.bluecatnetworks.com
Brix Networks	6	www.brixnet.com
Captus Networks	66	www.captusnetworks.com
CDW Computer Centers Inc	95	www.cdw.com
Colubris Networks	81	www.colubrisnetworks.com
Computer Associates	96	www.ca.com
*DLTtape Technology	32	www.superdlttape.com
Global Computer Supplies	76	www.globalcomputer.com
Global Technology Associates Inc	82	www.gnatbox.com
Hergo Ergonomic Supplies	76	www.hergo.com
Hewlett Packard	15, 17	www.hp.com
IBM	13, 59	www.ibm.com
Intel Corp	23, 36-37	www.intel.com
Interloci	84	www.interloci.com
Learnkey Inc	84	www.learnkey.com
Maxtor Corp	38	www.maxtor.com
Motient	11	www.getthedominoeffect.com
Net Optics Inc	77	www.netoptics.com
Network Instruments	83	www.networkinstruments.com
Novell Inc	20-21	www.novell.com
Pulizzi Engineering	81	www.pulizzi.com
Radware	34	www.radware.com
Raritan Computer	81	www.raritan.com
Riverstone Networks	26-27	www.riverstonenet.com
Rose Electronics	82	www.rose.com
SAP	57	www.sap.com
SBS Technologies	80	www.sbs.com
Sharkrack	83	www.sharkrack.com
Sun Microsystems Inc	4	www.sun.com
Sybase	2-3	www.sybase.com
Systems Manufacturing Corp	80	www.smcplus.com
Tivoli	46	www.tivoli.com
VBrick Systems	78	www.vbrick.com
Verilink	68	www.verilink.com
Veritas Software	4	www.veritas.com
Web Event	78	www.webevent.com
Websense	53	www.websense.com
Western Multiplex	24	www.wmux.com
Western Telematic	75	www.wti.com
World Data Products	84	www.wdpi.com
XO Communications	9	www.xo.com

Network World Fusion - www.nwfusion.com

ADC Kentrox
Adtran
Agilent Technologies
Akamba
Appian Communications
BMC Software
BoldFish
BoostWorks
Business Layers
Certicom
Cisco Systems
Cisco/Qwest
ClickArray Networks
Computer Associates International
DataCore
Dataprobe
E-presence
EMC
Equilibrium
F5 Networks
Fireclick, Inc
Fluke Networks
Hitachi
Hummingbird
IBM
Intel
Ixia
Journyx
Lightreading
MSI
Metamerge
Net to Net Technologies
NetCalibrate
NetIQ Corp
NetScout
NuSphere
Opalis Software
Orac;e
Radware
Riverstone Networks
SAP
Siemens
Silverback
Sprint
Stalker Software
Sumitomo Electric Lightwave
Surf Control
Swicth and Data
Sygate Technologies, Inc
Symantec
Telogy Networks, Inc
WaveSmith Networks
Web Event
Wilson WindowWare
Zuma Networks

These indexes are provided as a reader service. Although every effort has been made to make them as complete as possible, the publisher does not assume liability for errors or omissions.

*Indicates Regional Demographic

NetworkWorld seminars and events *Network World Seminars and Events* are one and two-day, intensive seminars in cities nationwide covering the latest networking technologies. All of our seminars are also available for customized on-site training. For complete and immediate information on our current seminar offerings, call a seminar representative at 800-643-4668, or go to www.nwfusion.com/seminars.

Publicize your press coverage in *Network World* by ordering reprints of your editorial mentions. Reprints make great marketing materials and are available in quantities of 500 and up. To order, contact Reprint Management Services at (717) 399 1900 x124 or E mail: rtry@rmsreprints.com

Economy

continued from page 7

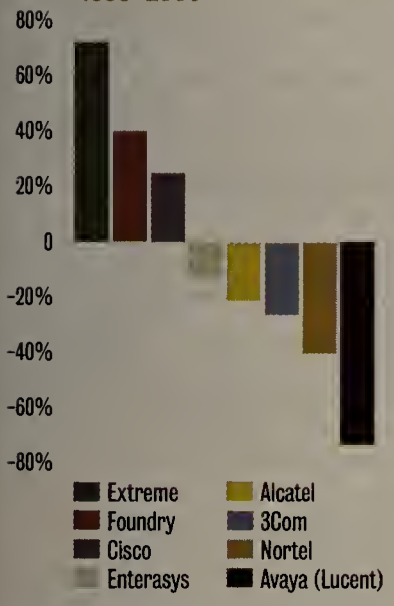
competitors further down (see graphic, right).

In the first quarter this year, Cisco held the top revenue spot in Layer 2-Layer 7 Ethernet switches, with 57% of the $3.3 billion worldwide market, according to Dell'Oro. In distant second was Nortel, with 8% of the market, followed by Cabletron spin-off Enterasys, with 5%.

Shrinking switch revenues

With a few exceptions, Ethernet switch revenues have shrunk for many vendors over the past year:

Percentage increase or decrease in total worldwide LAN switch revenue, 1999-2000



*Includes modular and fixed 10/100/1000M bit/sec Ethernet and ATM switch ports.

SOURCE: IDC

One industry analyst from Gartner estimates that 90% of the large enterprise switch business that 3Com once held is now in Cisco's hands.

Server hardware is another area that has been affected, with IDC data on the worldwide PC and server markets also looking grim. Like the LAN switch market, IDC says the PC market will see its first-ever decrease this year, dropping 6% from last year. As for servers, the U.S. market saw total revenue drop from $5.5 billion in the first quarter of 2000 to $4.4 billion in this year's first quarter.

This is also resulting in cutbacks and consolidation in that industry. The most prominent example is last month's announcement that Hewlett-Packard would buy Compaq. That move was made in part to cut costs, and the companies said they would eliminate 15,000 jobs in the deal.

In the area of WAN services, DSL providers have been the highest-profile failures, with Rhythms NetConnections and Covad Communications filing for bankruptcy protection last month. NorthPoint Communications went bankrupt earlier in the year, with AT&T picking up the company's assets. Competitive local exchange carriers are also feeling the crunch, with companies such as Winstar and Teligent also filing for bankruptcy protection earlier this year.

All this has prompted the big carriers, such as WorldCom and AT&T, to use their relative stability as a marketing weapon against smaller competitors.

By contrast, IT services and software, and storage (to some extent) are weathering the storm. The IT services market, which includes consulting, support and training, is expected to grow 10.5% this year, IDC says. The total software market is expected to grow 12.9%.

"Software has been more resilient [than hardware], as companies continue to invest in applications that optimize the use of their existing hardware," says Kevin White, senior economic analyst at IDC. And while certain types of IT services have been affected, he adds, "other areas like IT outsourcing receive a bit of a boost as companies seek new ways to cut costs."

To some degree, storage is also hanging in there, although slower-than-usual growth of 3.4% is expected this year by IDC. However, observers have seen an uptick in demand for storage capacity in the immediate wake of the terrorist attacks. Along the same lines, some expect to see an increased demand for IT consulting services in the areas of disaster recovery and security planning for sensitive corporate data.

Users cautious

The effect of the industrywide shakeup has made companies purchasing IT equipment more cautious, which is bound to delay any recovery.

"There's generally a go-slow mentality right now," Predictive's Burgess says.

A year ago, with Y2K fears abated, and IT spending budgets fatter, companies spent a lot on IT infrastructure, especially in LAN switching technologies. This level of spending, it seems, will not be duplicated this year, as the poor economy has cut into enterprise IT budgets.

"Our network is only a year old," says Tony Crognale, network technician with Scottsdale Insurance, a subsidiary of Nationwide Insurance in Arizona. "When we originally put in place the infrastructure we have, the economy wasn't the way it is now."

With Layer 3 switching and Gigabit Ethernet in place, the company won't put its dollars toward new network infrastructure for a while, Crognale says.

Research from IDC indicates other companies are following the same strategy. IDC surveyed 100 U.S. companies about trends in their network infrastructure spending, and found that 85% of them purchased Gigabit Ethernet switches last year. With all that bandwidth in place, only 36% of businesses said they would add more Gigabit switches to their networks this year, while even less (30%) indicated they would make initial installments of Gigabit Ethernet this year.

Layer 3 switch technology followed the same route, according to the study. While 81% of respondents said they installed Layer 3 switches last year, only 24% said they would buy them this year.

Meanwhile, as the economy takes its toll on vendors, their long-term viability becomes a bigger issue for buyers — but only with some kinds of gear.

"With Layer 2 switches, pretty much either they work or they don't," says John Lauro, systems administrator at the University of Michigan at Flint. "If something happened to one of our vendors in that area ... that doesn't really matter because they're such a commodity item. You can get them from any vendor, and they're all interoperable."

While Layer 2 switches mostly perform the relatively simple act of bridging LANs, Layer 3 switches handle different protocols and route traffic, so Lauro says that the added complexity caused more trepidation about what vendor to pick for Layer 3 switching.

"When we went with Foundry [Networks], they were a relatively young company," he says. "That was one of the concerns when settling between Foundry and Cisco, Lucent and Nortel when trying to pick a Layer 3 vendor. Who would most likely be around over the next few years was one of the points we considered."

Opinions differ on how market and economic conditions should affect spending decisions. Gene Rekos, vice president of technology at Teen.com, says he's saving money by buying used and remanufactured equipment.

"We were buying newer equipment, so we were buying it from, say, Compaq and Dell and Sun, and now we've shifted to value-added-type companies that also sell remanufactured and used equipment," he says. He buys from companies such as Circular Technologies and Computech Systems.

Brian Rust, communications director of the University of Wisconsin's Department of Information Technology, takes the opposite view. He says the university isn't changing its view of vendors because of increased competition.

"We don't go for cut-rate things or, more importantly, things that may be incompatible with what we're already using regarding the network. So just because a particular company comes to us and says we have a great deal going right now on routers, that doesn't mean that we suddenly shift gears and buy another product.

Jennifer Mears and Linda Leung contributed to this story.

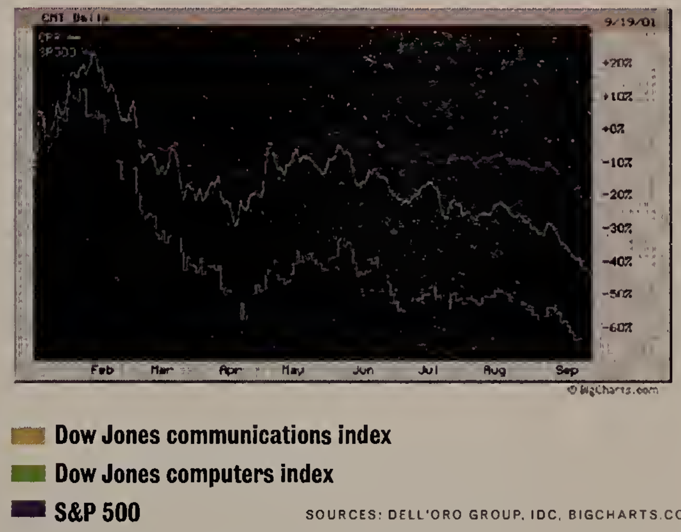
Get more information online.
DocFinder: 6162
www.nwfusion.com

Hit hard

While a sluggish economy has been a drag on most U.S. markets, it's been particularly tough on communications technology and computer hardware vendors.

Signs of trouble include

- The worldwide Ethernet switch market faces a 7% decline from last year, its first drop ever.
- PC shipments also face their first decline, down 6% from last year.
- First-quarter server revenue were off 25% from Q1 2000.
- Stocks of communications and computer companies have fallen further than those of others (see chart).



SOURCES: DELL'ORO GROUP, IDC, BIGCHARTS.COM

Network World, 118 Turnpike Road, Southborough, MA 01772-9108, (508) 460-3333.

Periodicals postage paid at Southborough, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385662. Network World (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by Network World, Inc., 118 Turnpike Road, Southborough, MA 01772-9108.

Network World is distributed free of charge in the U.S. to qualified management or professionals.

To apply for a free subscription, complete and sign the qualification card in this issue or write Network World at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on the information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-508-490-6444.

Nonqualified subscribers: $5.00 a copy; U.S. $129 a year (except Washington, DC, $136.74); Canada $160.50 (including 7% GST, GST#126659952); Central & South America - $150 a year (surface mail); Europe - $205 a year (surface mail), all other countries - $300 a year (airmail service). Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication.

Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106.

PHOTOCOPYRIGHTS: Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Network World, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus 50 cents per page is paid to Copyright Clearance Center, 27 Congress Street, Salem, Mass. 01970.

POSTMASTER: Send Change of Address to **Network World**, P.O. Box 3090, Northbrook, IL 60065.

Copyright 2000 by Network World, Inc. All rights reserved. Reproduction of material appearing in Network World is forbidden without written permission.

Reprints (minimum 500 copies) and permission to reprint may be purchased from Reprint Management Services, (717) 399-1900 ext 124 or rtry@rmsreprints.com.

USPS735-730

BackSpin Mark Gibbs

Television is still the winner

"In the City of God there will be a great thunder, Two brothers torn apart by Chaos, while the fortress endures, the great leader will succumb, The third big war will begin when the big city is burning — Nostradamus, 1654."

— An item of "information" that was widely circulated on the 'Net after Sept. 11

How do you get your news fix? Despite all the column inches dedicated to predictions of television's demise in the face of the Internet, the fact is that TV is what most of us turn to in moments of crisis.

That's not to say that the Internet's role in news distribution is insignificant, but it currently fails for two reasons: immediacy and veracity. Even so, there's something about the Internet that seems to make people believe what they see in e-mail and on the Web.

For example, the above quatrain arrived in my in-box from friends in the U.K., New Zealand and at least five U.S. states within 24 hours of the World Trade Center attack. The prediction was attributed to that old fraud Nostradamus, and in about half of the messages the date 1654 was cited.

This was particularly interesting as Nostradamus died in 1556, so we can safely assume he didn't have anything to do with it.

It turns out that a student at Brock University in Canada in the 1990s invented the fake quatrain for a critical essay about Nostradamus' prophecies.

What interested me about this misinformation was how it circulated so fast and how few people bothered to check if it was true. Not that checking was hard — finding a Nostradamus archive took seconds and finding warnings about the fake quatrain took minutes. But the fact is that so many of us want to believe this kind of hocus-pocus and, when it's on the 'Net, it seems we forget to be skeptical.

Now this is revealing because, given the number of data sources on the 'Net, determining the truth should be easier than determining the truth of what you see on television. But when we wanted news on the WTC attack, where did we all go? The TV. In some ways that's not too surprising as we all wanted to see what was happening as opposed to read about it. The 'Net is, after all, primarily a text medium.

Well, it turns out more than four-fifths of Americans relied primarily on television for news updates on the terrorist attacks last week, according to the Pew Internet & American Life Project as reported in NewsScan Daily on Sept. 17 (www.newsscan.com).

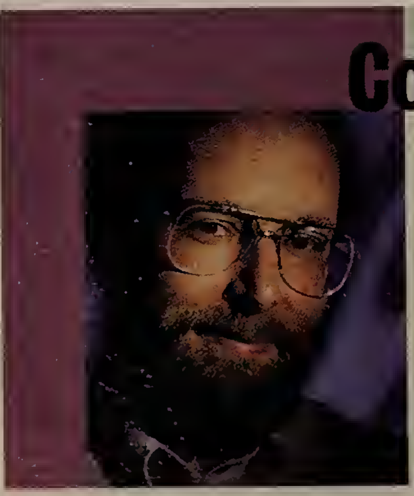
Although many news Web sites reported overwhelming numbers, the online population was down slightly Tuesday and Wednesday: 51% of those with access logged on, compared with 55% to 58% on a normal day.

But I suspect that beyond the need for immediacy was a need for truth, something that the 'Net offers up but not easily. The 'Net offers great detail, but frequently that detail is so overwhelming and in so many versions that it is hard to know where to start. And in all this confusion, different organizations attempt to report the facts and add their spin to the Web's deluge of fact, gossip and rumor.

For example, a British portal Bigwideworld.com ("The Ultimate Destination for the 'Net Generation") ran with the Nostradamus piece and published an article titled "Could We Have Foreseen It?" (www.bigwideworld.com/article.asp?a=1394). Not only does the author not know the difference between a quatrain (what the Big N wrote) and a quadrant (the term they used), but they are happy to refer to yet another even more richly embroidered version of the fake quatrain! Unfortunately, this is not unusual behavior on the 'Net.

The facts are that TV is great for the big picture but lacks detail, while on the Internet you can't rely on any one voice or service for a rational, objective take on the facts. And until the 'Net offers broadband access to the majority of users so it can deliver an immediacy equivalent to TV, TV will remain the dominant news medium.

News to nwcolumn@gibbs.com.



Compendium Stuff you just can't miss.

By Adam Gaffin

Now don't take this the wrong way. All those Web homages to the victims of the terrorist attacks are moving, yes. But after awhile, getting e-mail after e-mail about them gets, well, a little exhausting.

Gartner has put out a paper on "e-mail etiquette when discussing disaster." Basically, "occupational spam" (i.e., employees sending missives to everybody in the company) has surged over the past few weeks. That's OK, except people are sometimes sending giant attachments: "Gartner has seen one PowerPoint presentation about the disaster nearly a megabyte in size."

How to deal? Gartner's recommendations:

"For their part, enterprises shouldn't legislate against such conversations or send messages such as 'Let's get back to work, folks!' which may seem insensitive. . . . Gartner recommends that enterprises create a place where people can share their feelings and opinions outside of the normal flow of business e-mail. For example, a Web discussion site on the corporate intranet would help take this conversation out of people's in-boxes yet would also acknowledge the legitimate need to discuss the tragedy." DocFinder: 6150

But don't send any more e-mail about . . .

Nostradamus (see what the esteemed Mark Gibbs has to say about that above) or how we're all supposed to stand outside tonight with a candle so the government can take a picture of us for posterity. Urban legends are nothing new, of course, they've been around for generations. What's different is the speed at which they spread over the Internet. What's sobering is how people quickly assume they are true. Isn't that Nostradamus prediction amazing (never mind that predictions are kind of useless if nobody knows about them ahead of time)! How about that guy who "surfed" the collapsing building down from the 86th floor? The Urban Legends site now has an entire page devoted to World Trade Center urban legends. DocFinder: 6152

But ultimately, those are harmless. Could a clever foe use the Internet to spread misinformation? What about those "news accounts" about the 4,000 Jews who allegedly stayed home from their jobs at the WTC that are now spreading across online forums? In the past, terrorist groups set up Web sites, which were only effective in reaching people who made a point of punching in their URL. Would an online "whispering campaign" prove more effective for them?

And in other news

Then we have Nimda, the worm that seemed to spread a lot faster than the earlier Code Red (last week, we saw a lot more Nimda-spawned file queries on our Web servers than we ever did with Code Red — thank goodness for Apache! Go to DocFinder: 6154 for more info on the worm). On SiliconValley.com, Dan Gilmor argues people have got to stop calling these things Internet worms, though:

"This is a Microsoft worm, and it once again gets spread through the opening of Outlook e-mail attachments. I'm sick of this. I'm sick of Microsoft's selfish and casual attitude toward its users' safety." DocFinder: 6155

Some silliness

Go ahead, take a breather for a minute or two and call up these sites:

Toddler on a string — It's basically a giggling toddler. Move him with your mouse to make him giggle some more. Turn up your sound (Internet Explorer only, alas). DocFinder: 6156

Beer-drinking pigs — Read up on one of St. Croix's best tourist attractions. Complete with animated photos. DocFinder: 6157

Refurbished screw for sale — Dell has one available for five cents (via Anil Dash). DocFinder: 6158

Have a refurbished washer to go with that screw? Solicitations accepted at agaffin@nww.com.

"Fred, can we have 20 more phones added to the system?"

Translation: Can we completely ignore its capacity?

At CDW, we understand what it can be like in IT.

That's why we offer all the brand name technology solutions you might need. Like telephony, PCs, storage, networking, software, power protection, digital imaging and more. You name it and we've got it.

One-Stop Solution: From system software to networking, no matter what you need, CDW is your one-stop solution. In a flash, we'll get you what you need, and get it shipped out – usually the same day.

Personal Expertise: CDW assigns an account manager and a team of product experts to your business. So we better understand your IT needs and know how to make your day a little easier.

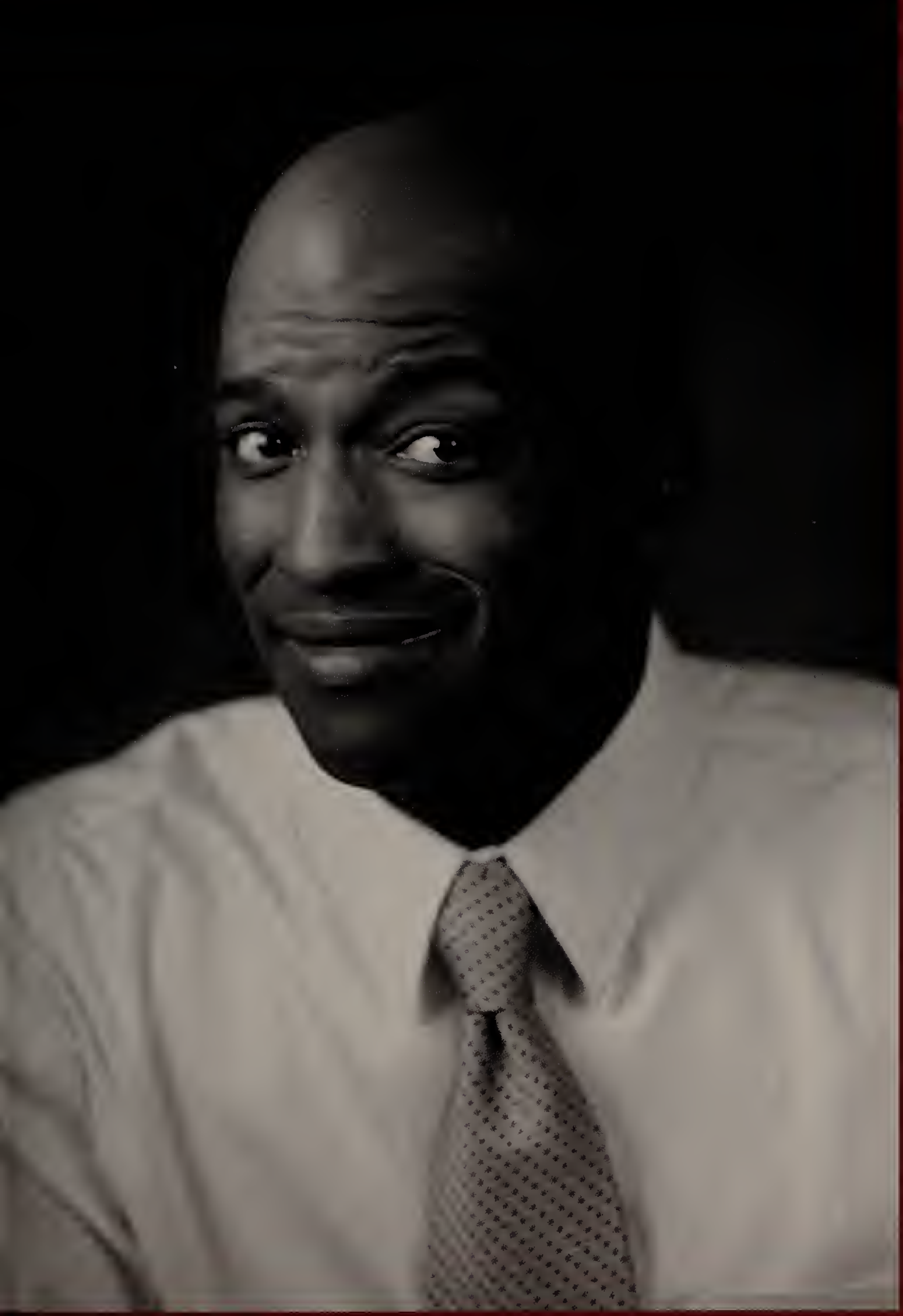
Reliable Resource: CDW is your Direct Solutions Provider,™ delivering computing and telephony solutions at competitive prices. Plus, technical expertise with the backing and reliability of a Fortune 500® Company.

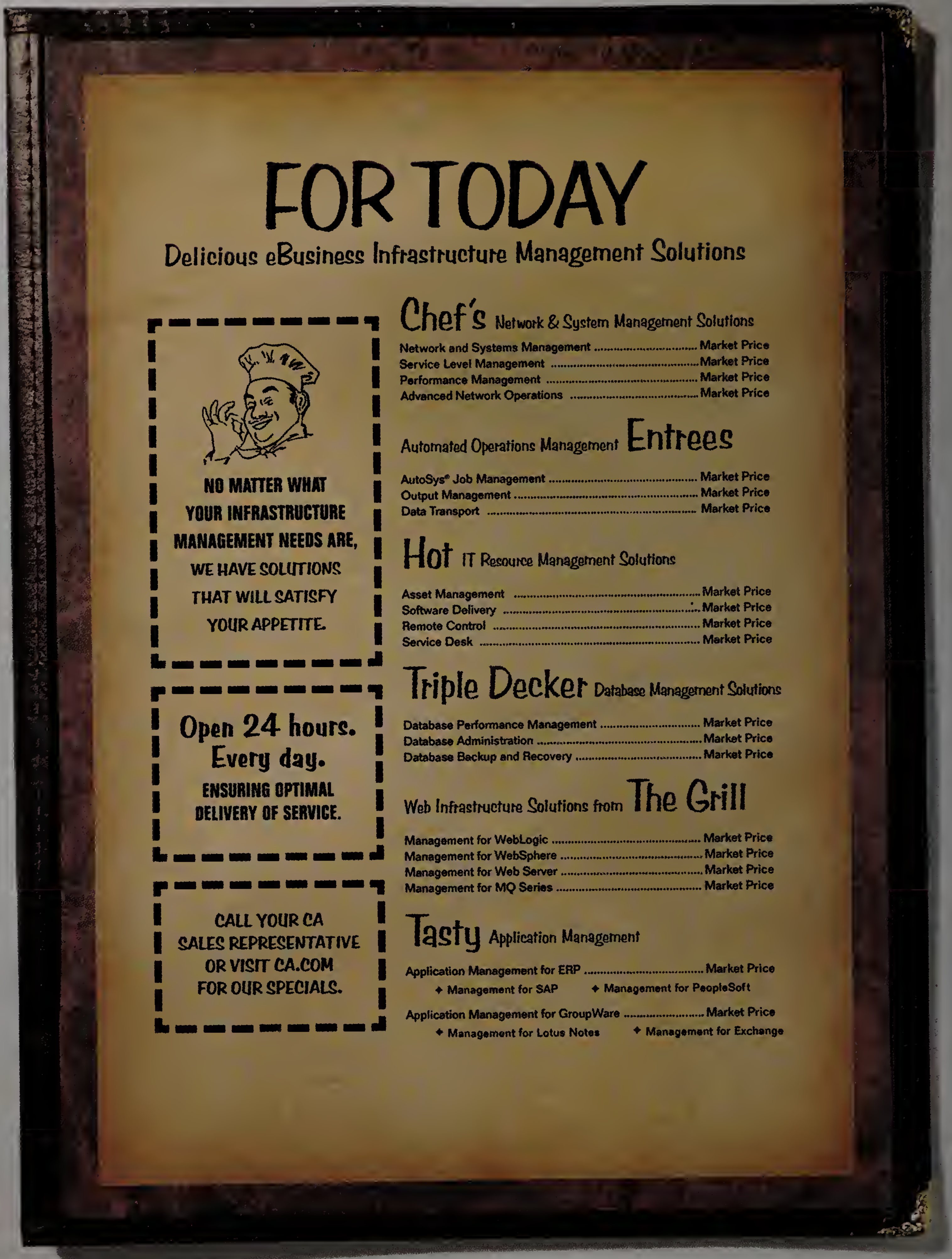
www.cdw.com 888.239.8244

CDW®

Computing Solutions Built for Business®

[illegible]





FOR TODAY

Delicious eBusiness Infrastructure Management Solutions

NO MATTER WHAT YOUR INFRASTRUCTURE MANAGEMENT NEEDS ARE, WE HAVE SOLUTIONS THAT WILL SATISFY YOUR APPETITE.

Open 24 hours. Every day.

ENSURING OPTIMAL DELIVERY OF SERVICE.

CALL YOUR CA SALES REPRESENTATIVE OR VISIT CA.COM FOR OUR SPECIALS.

Chef's Network & System Management Solutions

Network and Systems Management	Market Price
Service Level Management	Market Price
Performance Management	Market Price
Advanced Network Operations	Market Price

Automated Operations Management Entrees

AutoSys® Job Management	Market Price
Output Management	Market Price
Data Transport	Market Price

Hot IT Resource Management Solutions

Asset Management	Market Price
Software Delivery	Market Price
Remote Control	Market Price
Service Desk	Market Price

Triple Decker Database Management Solutions

Database Performance Management	Market Price
Database Administration	Market Price
Database Backup and Recovery	Market Price

Web Infrastructure Solutions from The Grill

Management for WebLogic	Market Price
Management for WebSphere	Market Price
Management for Web Server	Market Price
Management for MQ Series	Market Price

Tasty Application Management

Application Management for ERP	Market Price
✦ Management for SAP ✦ Management for PeopleSoft	
Application Management for GroupWare	Market Price
✦ Management for Lotus Notes ✦ Management for Exchange	

Unicenter®

THE BEST INFRASTRUCTURE MANAGEMENT SOFTWARE.
AVAILABLE À LA CARTE. BON APPÉTIT.

In infrastructure management, no two appetites are alike. That's why Unicenter lets you choose only the components you need, just when you need them. Of course, it's also still available prix fixe. Regardless, the individual elements will work together seamlessly. So you can build end-to-end infrastructure management solutions for your business without biting off more than you can chew.

ca

Computer Associates™

HELLO TOMORROW | WE ARE COMPUTER ASSOCIATES | THE SOFTWARE THAT MANAGES eBUSINESS℠

ca.com/unicenter

©2001 Computer Associates International, Inc. (CA). All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.